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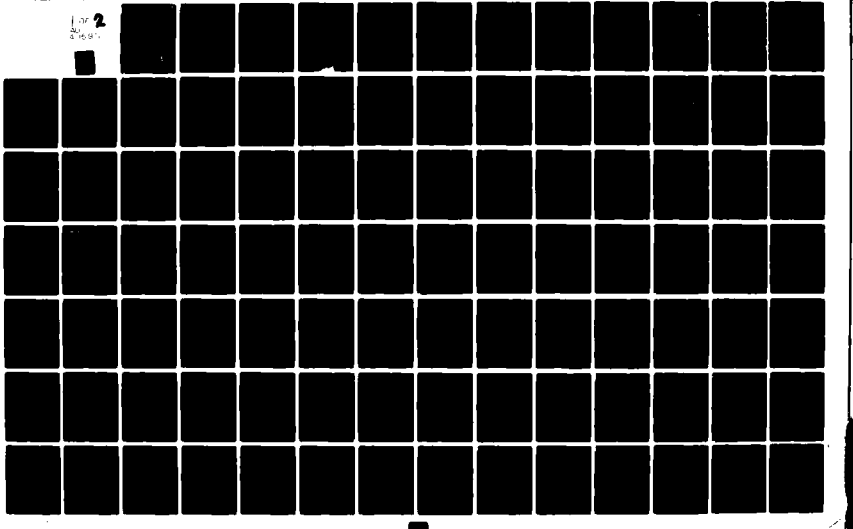

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TERRESTRIAL BIOLOGICAL INVENTORY, HILLVIEW DRAINAGE AND LEVEE DISTRICT, GREENE AND SCOTT COUNTIES, ILLINOIS

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A qualitative evaluation of the terrestrial biological resources within the Hillview Drainage and Levee District, Greene and Scott Counties, Illinois was performed. Field reconnaissance, habitat mapping, and consultation with recognized authorities were combined to present an overview of the existing plant and animal communities within the District. The various habitats were analyzed with regard to their abilities to support wildlife.

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A total of 222 plant species and 40 vertebrate species were observed in the Hillview Drainage and Levee District. Of the vertebrates, 33 were avian, 5 were mammalian, and 2 were amphibian species.

The habitats most capable of supporting wildlife are the bottomland forest and the border vegetation adjacent to the ditches and creeks. Local residents use both of these habitats for hunting. The bottomland forest provides habitat for deer, squirrels, and other game species. The slough areas within the unprotected floodplain attract waterfowl and duck hunting is considered successful within the Hillview Drainage and Levee District. The border vegetation along the ditches and creeks provides cover for bobwhite quail and eastern cottontail rabbit. The Bobwhite quail is considered the most valuable game species within the District.

ABSTRACT

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1.0 INTRODUCTION

The Flood Control Act of 23 October 1962, Public Law 87-874 authorized a comprehensive plan of improvement for flood protection and other purposes in the Illinois River and Tributaries Basin. This plan of improvement was in accordance with the recommendations of the Chief of Engineers in House Document Number 472, Eighty-Seventh Congress, 2nd session. The Hillview Drainage and Levee District is one of 16 local flood protection projects recommended for improvements. The proposed plan of improvement will provide increased flood protection to 13,070 acres of primarily agricultural lands and to the village of Hillview, Illinois.

A General Design Memorandum-Phase 1, Plan Formulation, for the Hillview Drainage and Levee District, Greene and Scott Counties, Illinois is in preparation. Included in Phase 1 is a planning document, providing environmental information to be considered in the identification of alternative solutions to water resource problems and opportunities associated with the District. This report provides a qualitative evaluation of the wetland and terrestrial habitats located in the District and will be used as part of the Phase 1, Environmental Planning Document.

2.0 MATERIALS AND METHODS

2.1 Study Area

The Hillview Drainage and Levee District, Greene and Scott Counties, Illinois, is located on the east bank of the Illinois River between River Mile 43.2 (the mouth of Hurricane Creek) and River Mile 50.0 (the mouth of Little Sandy Creek) (Figure 1).

The Hillview Drainage and Levee District encompasses 13,070 acres of primarily agricultural land, protected by a total of 7.1 miles of flank levees on the northern and southern boundaries and 7.2 miles of riverfront levee. A tract of bottomland forest extends along the western boundary of the District, between the Illinois River and the riverfront levee. Narrow stretches of shrub communities border the drainage ditches and flanking creeks, and small areas of highly disturbed riparian forest are scattered within the District.

Hurricane Creek (southern boundary) and Little Sandy Creek (northern boundary) make up the major flowing waters (lotic habitats) within the Hillview Drainage and Levee District. Both creeks have been channelized. Several interconnecting drainage ditches flow into the creeks through three pumping stations (Figure 2). There are no lakes or ponds (lentic habitats) within the District, although a series of sloughs is present riverward of the riverfront levee. The population center in the area is the village of Hillview.

2.2 Field Reconnaissance

A field survey of the Hillview Drainage and Levee District was conducted on 9 and 10 October 1981 to qualitatively evaluate the stream corridor habitats and areas bordering the riverfront levee. Twenty-one survey sites were examined (Figure 2). These included: one site in an upper, middle, and lower reach of each of four major drainage ditches (12 sites) and the two bordering creeks (6 sites); one site riverward of each flanking levee at the bordering streams (2 sites); and 1 site along the Illinois River, midway between the flanking levees.

At each survey site within the Hillview Drainage and Levee District information regarding habitat type and quality were recorded. Where riparian vegetation was present, the following factors were identified:

1. Woody vegetation present and dominant plant species (or generic groupings);
2. Canopy and/or understory cover;
3. Age class of community;
4. Significant or unique habitat qualities, including suitability for wildlife;
5. Presence of terrestrial and semi-aquatic vertebrates (as identified by sight, call, tracks, scats, or other signs).

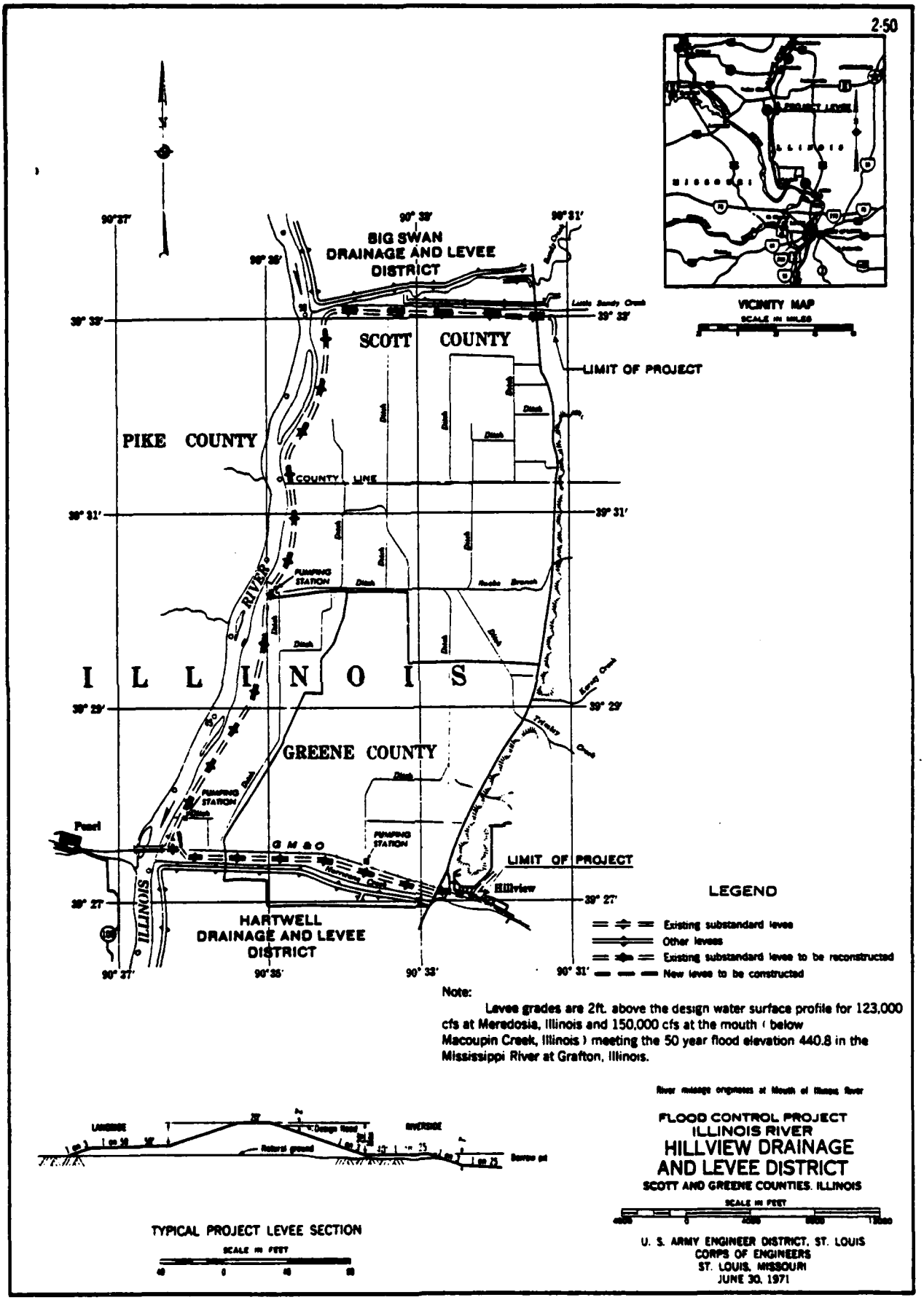
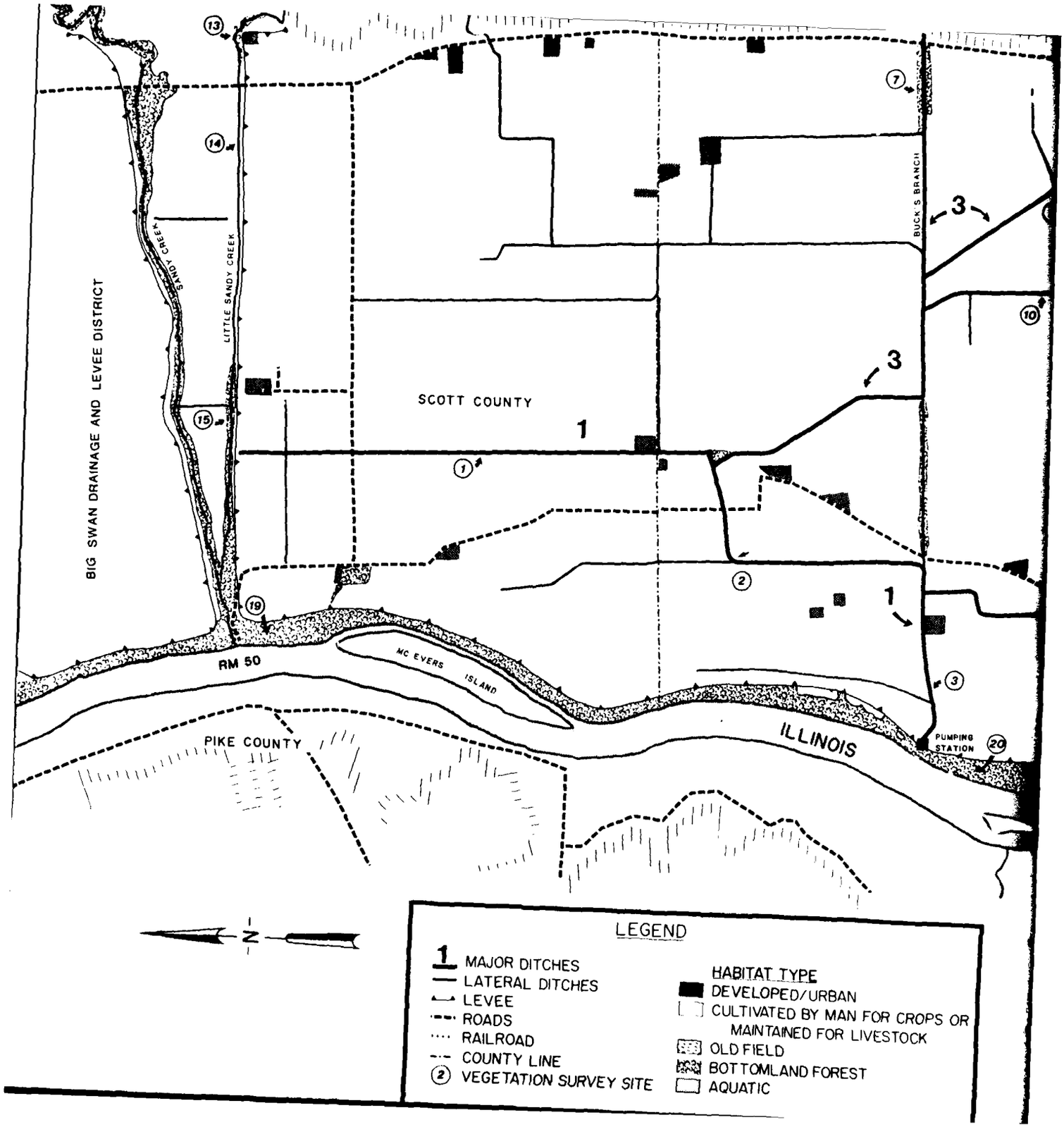
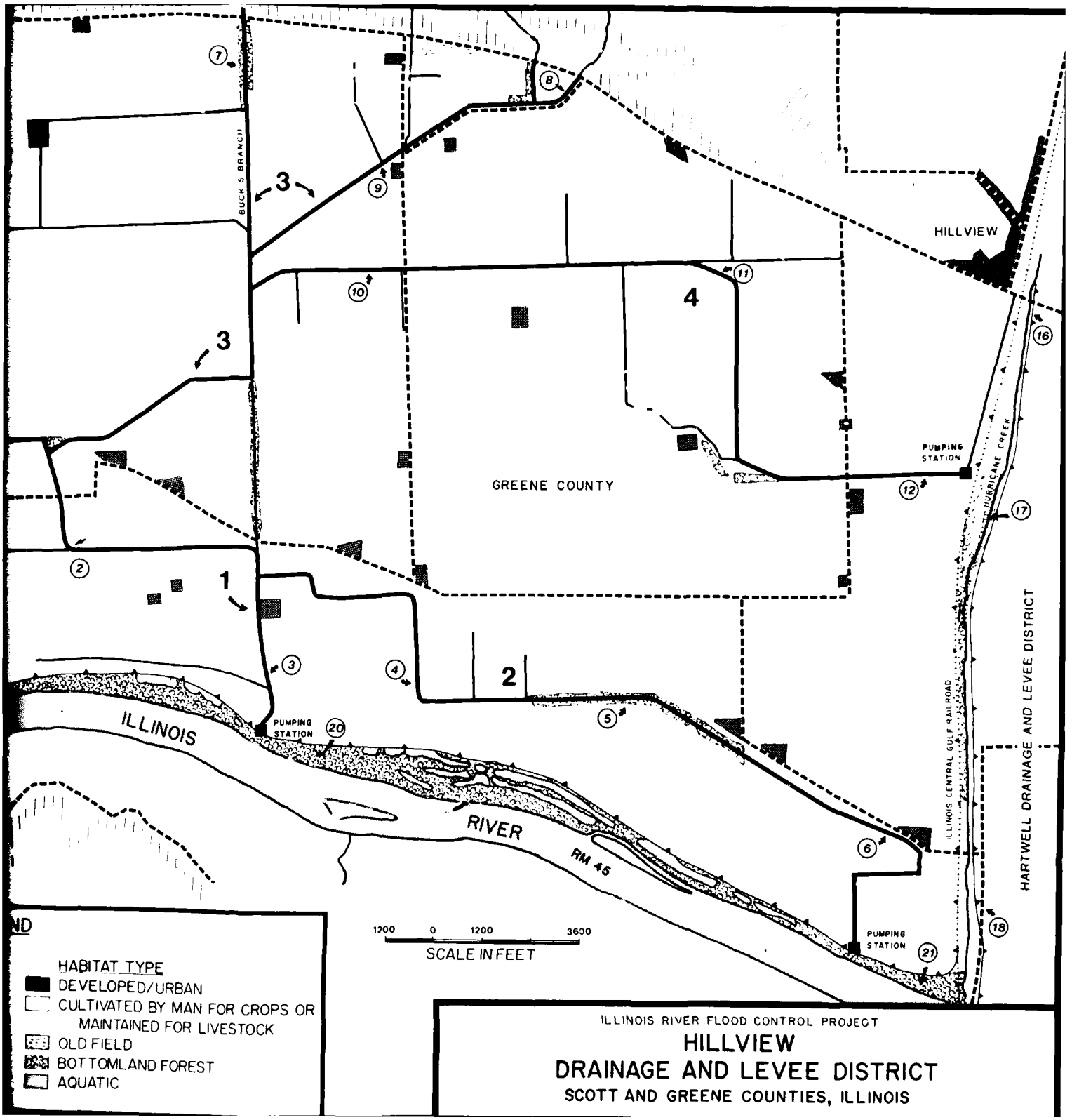


Figure 1. General map of the Hillview Drainage and Levee District, Greene and Scott Counties, Illinois.


BIG SWAN DRAINAGE AND LEVEE DISTRICT
LITTLE SANDY CREEK
BUCK'S BRANCH
SCOTT COUNTY
PIKE COUNTY
RM 50
MC EVERS ISLAND
ILLINOIS
PUMPING STATION
LEGEND
1 MAJOR DITCHES
LATERAL DITCHES
LEVEE
ROADS
RAILROAD
COUNTY LINE
2 VEGETATION SURVEY SITE
HABITAT TYPE
DEVELOPED/URBAN
CULTIVATED BY MAN FOR CROPS OR MAINTAINED FOR LIVESTOCK
OLD FIELD
BOTTOMLAND FOREST
AQUATIC


BUCK'S BRANCH
HILLVIEW
GREENE COUNTY
PUMPING STATION
HURRICANE CREEK
ILLINOIS CENTRAL GULF RAILROAD
HARTWELL DRAINAGE AND LEVEE DISTRICT
ILLINOIS
RIVER
RM 45
PUMPING STATION
PUMPING STATION
1
2
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SCALE IN FEET
HABITAT TYPE
DEVELOPED/URBAN
CULTIVATED BY MAN FOR CROPS OR MAINTAINED FOR LIVESTOCK
OLD FIELD
BOTTOMLAND FOREST
AQUATIC
ILLINOIS RIVER FLOOD CONTROL PROJECT
HILLVIEW
DRAINAGE AND LEVEE DISTRICT
SCOTT AND GREENE COUNTIES, ILLINOIS

This information was used to present an overview of the existing wetland and terrestrial habitats within the District with regard to aesthetic quality and suitability to support animal life.

Composite lists of all plant species (Appendix A) and terrestrial and semi-aquatic vertebrates (Appendix B) observed within the study area were prepared. Voucher specimens for most plants were collected and deposited in the Stover Herbarium of Eastern Illinois University, Charleston, IL.

2.3 Photo-interpretation and Habitat Mapping

A series of 1979 color aerial photographs of the Hillview Drainage and Levee District was reviewed to identify the agricultural, aquatic, wetland, and terrestrial habitats present within the area. Acreage values of each of the habitats were estimated using a Keuffel and Esser model 620000 planimeter and Alvin model map meter. A base map of the area indicating the major habitats and survey site locations was prepared using a photo-composite (mylar copy) of the area. The habitat types identified on the map (Figure 2) include:

1. Developed
2. Land cultivated by man for crops or maintained for livestock
3. Old field
4. Border vegetation
5. Bottomland forest
6. Aquatic.

2.4 Literature Review and Consultation

All readily available reports and documents related to the wetland and terrestrial biological resources within the Hillview Drainage and Levee District and nearby areas were obtained and reviewed. In addition, the following selected individuals with extensive knowledge of the study area were contacted and interviewed:

Person	Location	Phone
Dr. Frank Bellrose	Illinois Natural History Survey	(309) 543-3950
Mr. Joe Janecek	U.S. Fish & Wildlife Service	(618) 457-3662
Dr. Frank Kulfinski	Southern Illinois University-Edwardsville	(618) 642-3368
Mr. Dick Lutz	Illinois Dept. of Conservation	(217) 782-3884

Each individual was asked of his knowledge and professional interests related to the wetland and terrestrial habitats within the Hillview Drainage and Levee District and nearby Drainage and Levee Districts. Results of pertinent literature findings and interviews with local authorities were then summarized.

3.0. RESULTS AND DISCUSSION

3.1. Literature Review

The terrestrial floral and faunal resources of Illinois have been well documented by investigators. Extensive literature search and consultation revealed no scientific investigations from within the Hillview Drainage and Levee District, but information can be drawn from surveys in Scott and Greene counties, along the Illinois River Valley, and from within representative regions into which several authors have divided the State of Illinois. Information regarding biotic features in these regional and county-specific studies are assumed to apply generally to the District.

Flora

The distributions of vascular plants, on a county by county basis, are provided by Jones and Fuller (1955), Winterringer and Evers (1960) and Mohlenbrock and Ladd (1978). The distribution of vascular hydrophytes in the state was compiled by Dolveare and Ebinger (1974); Winterringer and Lopinot (1966) described the aquatic plants and their general distributions. Mohlenbrock (1967; 1970a, 1970b; 1972; 1973; 1975) has also described and provided distributions of selected groups.

Anderson (1970) indicated (by map) that the area encompassing the confluence of Scott and Greene Counties and the Illinois River (the location of the Hillview Drainage and Levee District) was prairie as late as 1820. Since then, settlements and accompanying agricultural usage have brought great changes in vegetation. Turner (1934) identified grasslands in the floodplains of Illinois and described two such areas, one at the mouth of Apple Creek in Greene County (River Mile 38.2, 5 miles south of the District) and the other in the floodplain of the Mississippi River near Hillview, in Pike County. He listed the results of floral analyses in these prairies.

Biotic Regions

Based upon the climate, soil, topography, and geographic history, Vestal (1931) classified 8 ecological zones within Illinois, and from these features determined the likely vegetational features of each division. The Hillview Drainage and Levee District is located within the Mississippi Border Division according to this scheme and Vestal reported this zone to be rich in tree species as it has been occupied by forests longer than other areas in Illinois once occupied by prairie. Schwegman (1973) further delineated the divisions, and based upon physiography, flora, and fauna, determined 14 Natural Divisions in Illinois. The District falls within the Illinois River Section of the Upper Mississippi River and Illinois River Bottomlands Division. Floral and topographic characteristics are given in Section 3.3 of this report.

Amphibians and Reptiles

In his comprehensive survey of the amphibians and reptiles of Illinois, Smith (1961) reported a combined total of 109 species. Of these, 53 have ranges that include the Hillview Drainage and Levee District (Appendix Table C-1). The District falls within the Upper Mississippi Border division. Smith (1961) characterized this habitat as follows: "the extensive rock habitat and

the continuity of forest along the Mississippi, which serves as an avenue for the northward dispersal of southern animals, probably accounts for the large number of species in this area."

Birds

Because of its location in the Mississippi flyway, the State of Illinois is an area where a large number of bird species occurs as spring and/or fall migrants. The numbers of breeding, resident, and wintering species are also high. Bohlen (1978) reported that 383 species have occurred in the State (Appendix Table C-2) Graber and Graber (1976) reported that 180 breeding species occur regularly in Illinois. None of these investigators have compiled data from or conducted censuses in Greene or Scott Counties, but Graber and Graber (1963) have surveyed the birds of Illinois intensively. The vegetational communities within the Hillview Drainage and Levee District have been represented in these surveys, and the bird communities are most likely very close to those that would be found within the District. In their earlier publication, Graber and Graber (1963) included Scott and Greene Counties in the Southern zone, but later (1976) considered them as part of the Central zone of the state, as based on agricultural districts defined by the Illinois Cooperative Crop Reporting Service. The latter classification is used here in further discussion (Appendix Table C-2).

Graber et al. (1970, 1971, 1972, 1973, 1974, 1977) have compiled statewide distributional data on several avian families (mimic thrushes, thrushes, swallows, shrikes, tyrant flycatchers, woodpeckers, herons, and gnatcatchers and kinglets). These include censuses in Greene and Scott Counties and give distributions within the State of Illinois. Other compilations of bird counts were made by Musselman (1921) and Smith and Parmalee (1955).

Data concerning the breeding birds of Scott and Greene Counties are available from Breeding Bird Surveys which have been conducted in these counties since 1967. Survey Route 037 is located in the central part of Greene County and Route 038 in Morgan, Scott, and Greene Counties; both are north-south routes. Ninety-five breeding bird species have been reported along these two routes (Appendix Table C-3).

Mammals

Hoffmeister and Mohr (1972) report a mammal fauna numbering 56 native species in Illinois. Of these, 33 occur statewide, and a total of 38 have ranges that include Greene and Scott Counties (Appendix Table C-4). Other statewide descriptions and distributions of mammals were given by Necker and Mohr (1941) and Necker and Hatfield (1941).

Game Animals

The most important group of wildlife in the Illinois River Valley is waterfowl (Bellrose et al. 1977). While there are no private duck-hunting clubs within the Hillview Drainage and Levee District, its location along the Illinois River in the Mississippi Flyway (Bellrose 1968) and the presence of adjacent sloughs probably contribute to successful waterfowl hunting in the immediate area. Investigations of duck food plants (Bellrose 1941; Bellrose and Anderson 1940, 1943; Anderson 1959) have disclosed that many of the plants present in the District are taken by ducks as food (Appendix A).

Upland birds and game mammals are also expected to be found in or near the study area, and regional and county-wide compilations of harvests indicate successful hunting of mourning doves, bobwhite, squirrels, cottontail, deer, and limited numbers of pheasant (Greeley et al 1962; Labisky 1969, 1975; Preno and Labisky 1971; and Appendix C)

Habitat Evaluation

Floodplain or bottomland forests represent a unique plant community capable of supporting diverse forms of wildlife. The concern for the decline and importance of riparian habitats to terrestrial wildlife has prompted much investigation particular to the State of Illinois. Much of the natural floodplain forests have been removed in Illinois primarily as a result of lumbering and drainage of bottomland areas for cultivation. Crites and Ebinger (1969) and Phillippe and Ebinger (1973) have surveyed floodplain forests in Illinois; Hosner and Minckler (1960, 1963) discussed the bottomland hardwood forests of southern Illinois in particular; and Turner (1934) reported on the distribution of grasslands in the floodplains of the state. Investigations have included those of disturbed bottomland vegetation: Turner (1931) discussed plant succession in relation to levee construction, and Ives (1965) analyzed the effects of tree regrowth following cut-over of a west-central Illinois floodplain forest.

The importance of floodplain forests in the provision of wildlife habitat is well-documented, and investigators in the State of Illinois have contributed to this subject. Fawver (1947a, b) and Fleig (1972) have inventoried the bird populations of Illinois bottomlands. Fawver (1947a) included mammal populations in his surveys. Graber and Graber (1976) listed habitat specialities of the birds of the 3 regions of Illinois; bottomland forest is a specialty of many species listed.

In recent years, efforts have been made to describe and conserve natural areas in the State of Illinois that are unique or valuable with regards to their plant or animal communities. Descriptions and inventories of these areas are given by Evers (1961), Schwegman (1973), and White and Madany (1978). In 1963, the Illinois Nature Preserves Commission was established as a formal committee to aid in the preservation of natural areas within the state. Recent information on the number and locations of Illinois designated natural areas is available (Illinois Nature Preserves Commission 1980). Among others, wetland inventories (Splettstarzer and Manke 1955) have been useful in identifying potential conservation areas. The importance of preservation of these and other areas as wildlife habitat has not been ignored by the State of Illinois. Consumptive and non-consumptive uses of wildlife by humans have been major factors in some investigations and management decisions that have been made. Bellrose (1954) discussed the importance of maintaining waterfowl refuges in the state. Graber and Graber (1976) described a method of habitat evaluation based on bird populations and their gross habitats. They computed a "faunal index" as an indicator of habitat quality. The index takes acreage and bird species present into account. Further descriptions of habitat values and associated fauna are discussed in Section 3.3.3 of this report.

3.2. Consultation

Individuals with extensive knowledge of the terrestrial biological resources within the study area were contacted and interviewed.

Dr. Frank Bellrose, Illinois Natural History Survey, was contacted on 5 November 1981. Dr. Bellrose is concerned primarily with waterfowl, and the information he was able to provide concentrated on these birds. In the past he included the Hillview Drainage and Levee District in his waterfowl surveys, the sloughs along the Illinois River attract migrating ducks and geese. This area was excluded from his route during the 1950's because he was not encountering substantial numbers of waterfowl there. He attributes this in part to the plowing of cornfields after harvest. Waterfowl are no longer using the agricultural land because there is no exposed grain residue left in the fields. Dr. Bellrose stated that, due to low counts of waterfowl, the hunting value for these game species is low. He also informed WAPORA that there are no nearby Natural Areas and did not know of any biological surveys in the District or adjacent Drainage and Levee Districts.

Mr. Joe Janecek of the U.S. Fish and Wildlife Service was contacted on 3 November 1981. Mr. Janecek mentioned that they did not have much information on the terrestrial and wetland habitats within the Hillview Drainage and Levee District. He did suggest that we check the new wetland classification system to see if the bottomland forested areas of the District between the levee and the Illinois River could be classified as wetland. In regard to Illinois threatened and endangered plant and animal species, Mr. Janecek said that they could not respond to state issues. He suggested a call to Mike Sweete of the Illinois Department of Conservation for information on State classified endangered and rare species. Mr. Janecek stated that there are no State Fish and Wildlife areas in the study area.

Dr. Frank Kulfinski, Southern Illinois University - Edwardsville, was contacted on 12 November 1981. He had conducted a quantitative vegetation survey in the Eldred and Spanky Drainage and Levee District, Illinois (Kulfinski 1978) but had not concerned himself with the habitat quality of the area. He could not inform WAPORA of any biological work within the Hillview Drainage and Levee District, and stated that he knows of no Illinois Natural Areas nearby.

Mr. Dick Lutz, of the Illinois Department of Conservation was contacted on 3 November 1981. Mr. Lutz mentioned that they have not done previous work in the Hillview Drainage and Levee District. He provided WAPORA with a list of Illinois classified threatened and endangered faunal species. He mentioned that there were no State Refuges in the immediate area and the nearest Illinois Natural Areas were located across the Illinois River in Pike County. Mr. Lutz provided WAPORA with locations and descriptions of these Natural Areas. He stated that no statistical information regarding harvest of faunal species within the District was available and the most recent available data was published in 1971 on harvest of selected faunal species of several game regions within Illinois. He provided WAPORA with a copy of this document. He also informed WAPORA that Mr. Vernon Kleen of the Illinois Department of Conservation is the state data compiler for the US Fish and Wildlife Service's Breeding Bird Survey.

Mr. Jim Powell, Commissioner of the Hartwell Drainage and Levee District was contacted on 10 November 1981. Mr. Powell mentioned that certain areas in the Hillview Drainage and Levee District provide excellent habitat for game species and that hunting success is generally good and hunting pressure high. Areas most often used in the District are the bottomland forest area between the main levee and the Illinois River and the shrubby vegetated areas adjacent to the drainage ditches and bordering creeks. The bottomland habitat supports deer, squirrel, and some coyote. Several sloughs near the river also support waterfowl. Mr. Powell stated that duck hunting is popular in these slough areas. He mentioned that quail hunting is very common in the District. The ditch-side vegetation provides excellent habitat for quail and also cottontail rabbit. Although successful harvest of pheasant in the District has rapidly declined since the early 1940's due to hunting pressure and habitat removal, Mr. Powell feels that recently this species has become slightly more abundant and is hunted with limited success. Mr. Powell mentioned that hunting is generally not restricted to the public by private landowners.

3.3. Terrestrial Biological Resources

The Hillview Drainage and Levee District is located in the Illinois River Section of the Upper Mississippi River and Illinois River Bottomlands Natural Division (Schwegman 1973). This section is characterized by broad floodplains and gravel terraces that were formed by glacial flood waters during Wisconsin glaciation. For the most part, the soils result from recent alluvium and are poorly drained, alkaline to slightly acid, and vary from sandy to clayey.

3.3.1. Past Vegetation

Originally, various plant community types occurred in the Illinois River Section. Listed below are these community types and some of the associated plant species.

Bottomland Forests

This was the most common community type present. These forests were dominated by Acer saccharinum L. (Silver Maple), Ulmus americana L. (American Elm), Populus deltoides Marsh. (Cottonwood), and Fraxinus pensylvanica Marsh. var. subintegerrima (Vahl.) Fern. (Green Ash). Other associated species include Quercus palustris Muenchh. (Pin Oak), Carya illinoensis (Wang.) K. Koch. (Pecan), Platanus occidentalis L. (Sycamore), Gleditsia triacanthos L. (Honey Locust), and Juglans nigra L. (Black Walnut).

Prairies

Mesic and wet-mesic prairies were occasionally found in the broad bottomlands of this section. On the mesic prairie Andropogon gerardii Vitman. (Big Bluestem), Sorghastrum nutans (L.) Nash. (Indian Grass), Sporobolus heterolepis (Gray) Gray. (Prairie Dropseed), and Panicum vigatum L. (Switch Grass) dominated, while in the wet-mesic prairie Spartina pectinata Lind. (Cord Grass), Calamagrostis canadensis (Michx.) Beauv. (Bluejoint Grass), various sedges (Carex spp.), and rushes (Juncus sp.) were the dominant species.

Marshes

Marshes were a common feature throughout this section. These areas were dominated by bulrushes (Scirpus spp.), (Carex spp.), bur-reeds (Sparganium spp.), cattails (Typha spp.), along with many other aquatic and semi-aquatic species.

Spring Bogs

Spring fed bogs with peat deposits are occassionally found on terraces of the Illinois River. Many rare and uncommon plant species occur in this community type. Distinctive species include Fraxinus nigra Marsh. (Black Ash), Toxicodendron vernix L. (Poison sumac), Symplocarpus foetidus (L.) Nutt. (skunk cabbage), and Caltha palustris L. (Marsh Marigold).

3.3.2. Existing Vegetation

Presently about 98% of the Hillview Drainage and Levee District is under cultivation, and except for a narrow band along the Illinois River, none of the original community types of the Illinois River Section remain. Total estimated acreages and relative percent composition of each major habitat classification are listed in Table 1.

A total of 222 plant species were observed during the field reconnaissance. A composite species list is presented as Appendix A. Voucher specimens of most of these taxa were collected and are deposited in the Stover Herbarium of Eastern Illinois University. The most common assemblages of plants for each of the three general survey areas (e.g. drainage ditches, bordering creeks, Illinois River floodplain outside of the levees) are discussed below.

3.3.2.1. Vegetation along the Drainage Ditches

Along most of the drainage ditches shrubs are the dominant vegetation, and in many areas form a continuous cover. The common species of this habitat type are Cornus drummondii C. A. Mey. (Rough-leaved Dogwood) and Salix interior Rowlee. (Sandbar Willow). Other shrubs found include Amorpha fruticosa L. (False Indigo), Rhus glabra L. (Smooth Sumac), Sambucus canadensis L. (Elderberry), and various blackberries (Rubus spp.). Usually various herbaceous species are found scattered under the shrub layer. Also, numerous tree species of various ages and sizes are scattered along the bank. The common tree species encountered were Acer saccharinum L. (Silver Maple), Acer negundo L. (Box Elder), Ulmus rubra Muhl. (Slippery Elm), Populus deltoides Marsh. (Cottonwood), Prunus serotina Ehrh. (Wild Black Cherry), Gleditsia triacanthos L. (Honey Locust), and Celtis laevigata Willd. (Sugarberry). (Sites 1, 2, 4, 6, 9, 10, 11, 12.)

In areas where recent disturbances have taken place (e.g. placement of dredge spoil over ditch-side banks), herbaceous communities exist. For example, at Site 8, Ambrosia trifida L. (Giant ragweed) grows in solid stands. These plants commonly reach a height of 3-4 meters and few other herbaceous plants occur under them.

Table 1. Land Use within the Hillview Drainage and Levee District, Greene and Scott Counties, Illinois.

Table 1a. Land within the protection of the Levee.

Habitat	Area (acres)	Percent of Total Area
Developed or Urban	135	1.0
Cultivated	12,788	97.8
Old Field	9	0.01
Border Vegetation	34	2.6
Floodplain Forest	24	0.2
Aquatic (lotic)	80	0.6
Total	13,070	

Table 1b. Land located outside the protection of the Levee.

Habitat	Area (acres)
Border Vegetation	5
Floodplain Forest	243
Aquatic (lotic)	22
(lenthic)	80
Total	350

At a few localities along the drainage ditches, distrubed riparian forests of varying ages occur. These small forests vary greatly in species composition. This is probably the result of variation in soil, drainage, flooding, and succession. The most immature forest area (Site 3) is dominated by Celtis laevigata Willd. (Sugarberry) and Diospyros virginiana L. (Persimmon), while the most mature forest areas (Sites 5 and 7) are dominated by Quercus palustris Muenchh. (Pin Oak), Populus deltoides Marsh. (Cottonwood), and Celtis occidentalis L. (Hackberry). Numerous other trees are also found in these forests along with many species of shrubs and woody vines.

3.3.2.2. Vegetation along the Bordering Creeks

The vegetation along Hurricane Creek and Little Sandy Creek is similar to that reported for the drainage ditches. In some areas, herbaceous communities exist with various species of grass dominating (Site 18). Shrub communities are also common along much of Hurricane Creek (Site 16) and the middle part of Little Sandy Creek (Site 14) with the dominant shrub being Salix interior Rowlee. (Sandbar Willow). Small parts of Hurricane Creek (Site 17) and most of Little Sandy Creek (Sites 13 and 15) have disturbed bottomland forests along their margins. The dominant species are Salix nigra Marsh. (Black Willow), Populus deltoides Marsh. (Cottonwood), Acer saccharinum L. (Silver Maple), and Acer negundo L. (Box Elder).

3.3.2.3. Vegetation between the Illinois River and Riverfront Levee

This area is dominated by bottomland forest and is the only habitat that has remained in a natural state. The species composition is relatively uniform throughout the study area with Acer saccharinum L. (Silver Maple) being the most important species. Other common components include Populus deltoides Marsh (Cottonwood), Ulmus rubra Muhl. (Slippery Elm), Ulmus americana L. (American Elm), and Celtis occidentalis L. (Hackberry). In most areas a few shrubs occur, and the herbaceous layer is relatively open. Several sloughs occur between the levee and the river and the area is seasonally and/or periodically inundated. This habitat is considered a wetland under the recent Fish and Wildlife Wetlands Classification system (Cowardin et al. 1979) and is classified as a Palustrine Forested Wetland.

3.3.3. Existing Vertebrates and Associated Habitats

The occurrence of terrestrial and semi-aquatic vertebrates at each of the 21 field reconnaissance sites within the Hillview Drainage and Levee District is summarized in Appendix D. Habitat type, woody vegetation, terrestrial and semi-aquatic species present, and vegetational parameters such as cover, age of stand, and habitat quality are given. Mast and fruit producing plant species are indicated by "*". A total of 33 avian, 5 mammalian, and 2 amphibian species were present in the District (Appendix Table B). These include those individuals which were sighted or otherwise noted in the study area at locations other than the 21 field sites. An animal was noted as present if identified by sight, call, tracks, scats, or other identifiable signs (e.g. deer browse).

Comprehensive inventories of terrestrial and semiaquatic vertebrates were not conducted during the field reconnaissance of the Hillview Drainage and Levee District. Information concerning the presence of these groups in Greene and Scott Counties is available through literature and unpublished survey data. Appendix C presents lists of the amphibians and reptiles, birds, and mammals whose ranges include Scott and Greene Counties or representative regions, as determined from range maps in various literature sources.

Within the Hillview Drainage and Levee District the major habitat types capable of supporting wildlife are:

1. Cultivated lands

2. Shrubby (successional) vegetation adjacent to drainage ditches and creeks, and

3. Bottomland forest between the levee and Illinois River and scattered within the District.

3.3.3.1 Cultivated Lands

The lands modified by man for cultivation or grazing of livestock comprise approximately 98% of the Hillview Drainage and Levee District, or 12,800 acres in total area. The fields probably attract small mammals and some amphibians and reptiles, but this was not verified by field reconnaissance. The presence of hunting raptors indicated that prey species do occur here. Raptors observed were turkey vulture, red-tailed hawk, marsh hawk (classified as endangered by the State of Illinois), and American kestrel. Other birds observed were killdeer, mourning dove, horned lark, rock dove, European starling, and house sparrow. All of these species are commonly found among cultivated fields or farmsteads.

These fields may have in the past attracted migrating waterfowl for feeding purposes, but most likely no longer do so because the corn fields are now plowed in the fall and there is no exposed grain residue stubble remaining as food supply (pers. comm., Frank Bellrose).

Wildlife Potential

In spite of the disturbance of this land, there exists some potential for the support of wildlife here. Several species are attracted to cultivated lands and pastures for feeding and nesting purposes; many of these are historically grassland or bare field inhabitants. The crops provide food to granivorous species and small vertebrates which are attractive as prey items for raptors and predatory mammals.

Vertebrates most likely to be found in cultivated fields are the following (Appendix C). Amphibians: small-mouthed and tiger salamanders, American toad, chorus frog, eastern yellow-bellied racer. Birds (Figure 3): horned lark, killdeer, savannah sparrow, eastern and western meadowlarks, bobwhite, barn swallow, grasshopper sparrow, bobolink, dickcissel, vesper sparrow, mourning dove, swamp sparrow, red-winged blackbird, eastern bluebird, mockingbird, american goldfinch, common flicker, and American kestrel. Mammals include: least shrew, eastern mole, thirteen-lined ground squirrel, pocket gopher, prairie vole, meadow jumping mouse, striped skunk, and coyote.

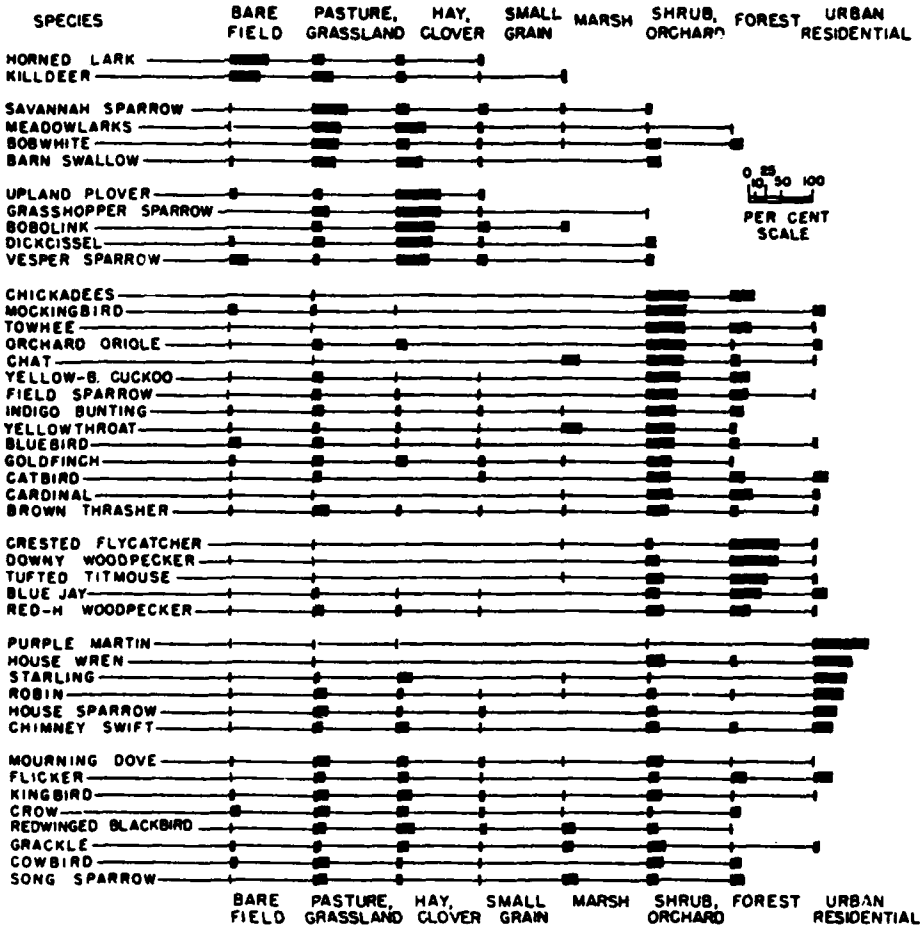

Figure 3a. Habitat preferences of common species of Illinois birds in summer as indicated by the population density of each species in each habitat. Each black bar represents the relative density of a given species in a given habitat; the sum of the relative densities for each species is 100 per cent. Data are from all zones of the state and from all summer censuses (Graber and Graber 1963).

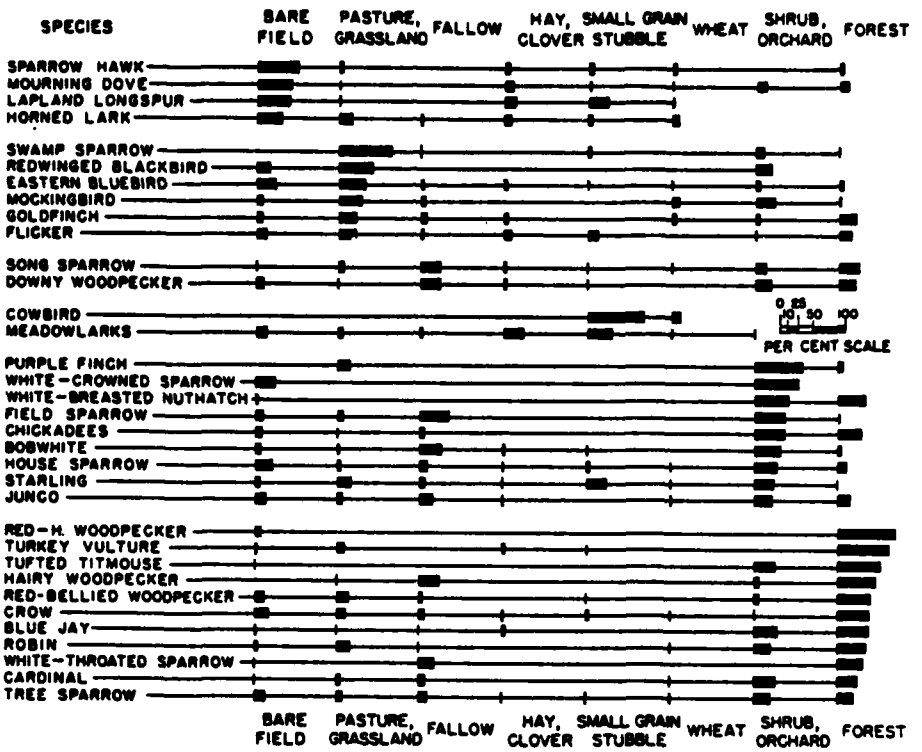

Figure 3b. Habitat preferences of common species of Illinois birds in winter as indicated by the population density of each species in each habitat. Each black bar represents the relative denstiy of a given species in a given habitat; the sum of the relative densities for each species is 100 per cent. Data are from all zones of the state and from all winter censuses (Graber and Graber 1963).

3.3.3.2. Successional Vegetation

Drainage Ditches

Vertebrates present along the ditches were primarily birds. Seven species were observed among shrubby ditch-side sites (Sites 1-4, 6, and 8-12): common flicker, blue jay, black-capped chickadee, American robin, cardinal, American goldfinch, and song sparrow. Most are commonly associated with in shrubby vegetation (Figure 3). Two birds, pied-billed grebe and barn swallow, were in or over the water. Only one amphibian, green frog, was observed in the ditches (Sites 8,9); muskrat (2,3,8) and skunk tracks (8) were noted at a few sites. No small mammals or reptiles were observed.

Growing at all sites along the ditches are mast- and fruit-producing woody vegetation, and this varies from a single species, rough-leaved dogwood at Site 8, to a majority of the species at Site 3, including trumpet creeper, sugarberry, rough-leaved dogwood, permimmon, white and red mulberry, wild black cherry, smooth sumac, elderberry, poison ivy, and frost grape.

Most ditch banks are steep, usually vertical, and numerous dens were observed in the walls of the banks. Only at Sites 7 and 9 are the banks not steep, but slope gradually. At these two sites a rocky stream bottom was visible, indicating possible nest sites for both semi-aquatic and aquatic vertebrates.

Notice was made during the field survey of one site (9) in the process of being bulldozed along the bank and another (1) along which herbicide had been sprayed along the west bank. Cover was very low along the recently disturbed banks at these sites. The presence of one terrestrial vertebrate, the common flicker at Site 9 and barn swallow at Site 1, both species associated with pastures or croplands, was noted at each.

The drainage ditches are considered good hunting grounds for bobwhite quail and eastern cottontail. Also, ring-necked pheasant is hunted with limited success by local residents (Greeley, et. al. 1962; Labisky 1975).

Bordering Creeks

Four sites along the creeks (13, 14, 16, 18) have shrubby vegetation similar to the ditch-side vegetation. Seven bird species and one amphibian were observed at these 6 sites: belted kingfisher, red-winged blackbird, song sparrow, rock dove, mourning dove, American goldfinch, blue jay, and green frog.

Forest Fragments

Forest fragments occur at ditch side Site 5 and creek side Site 15 and potentially attract wildlife of forest habitat. Edge habitat is also more extensive at these sites. In these forest fragments occur standing snags, which are not present along any of the drainage ditches, further increasing nest potential for hole-nesting and dwelling species.

Eight bird species were in these two second growth areas: common flicker, red-bellied woodpecker, black-capped chickadee (all hole nesters), mourning dove, blue jay, American robin, American goldfinch, and an unidentified warbler. No other vertebrates were noted.

The highest numbers of mast-and fruit-producing plants are at these sites. Among the 19 species are: pecan, sugarberry, rough-leaved dogwood, persimmon, pin oak, red mulberry, eastern red cedar, elderberry, climbing bittersweet, smooth sumac, mountain blackberry, black raspberry poison ivy, frost grape, and trumpet creeper.

Wildlife Potential

The vegetation bordering the creeks and ditches whether shrubby or disturbed bottomland forest fragments, is extensively used by a large number of vertebrate species. The major reasons for this are the high degree of cover, the presence of food items, and the proximity to water. In addition to those species mentioned, the vertebrates expected to use these shrubby and edge habitats are the following birds and mammals. Birds (Figure 3): mockingbird, rufous-sided towhee, orchard oriole, yellow-breasted chat, yellow-billed cuckoo, field sparrow, indigo bunting, common yellowthroat, eastern bluebird, gray catbird, brown thrasher, purple finch, white-crowned sparrow, white-breasted nuthatch, and junco; the last 4 in winter only. Graber and Graber (1976) give a more complete list of breeding species of shrub habitats. Mammals expected to use this habitat are: eastern cottontail, eastern chipmunk, woodchuck, white-footed mouse, coyote, red fox, striped shunk, and white-tailed deer.

3.3.3.3 Illinois River Floodplain

Between the levee and the Illinois River the habitat is predominantly bottomland forest. While woody understory is less dense within this area, canopy cover is on the average about 75%. The number of snags is increased over the forest fragments along the creeks and consequently the numbers of woodpeckers and other hole-nesting species were greater here. Steep banks do not occur along the river, nor is there a high percentage of herbaceous ground cover over most of the bottomland forest. Bottomland forest occurred at two other sites, along ditch 3 (Site 7) and Hurricane Creek (Site 17). The discussion that follows includes these sites unless noted.

An outstanding feature of the riverfront forest is the presence of several small sloughs along the forest's edge just riverward of the levee. This wetland area, presumably a permanent water source, can be an attraction for migrating waterfowl, shorebirds, semiaquatic mammals, and amphibians. Three species observed within these sites, great blue heron, muskrat, and leopard frog were probably present for this reason. Two of these, the great blue heron and leopard frog, were observed at these sites only. Vertebrates observed within the forest that were not at other sites were: eastern wood pewee, white-breasted nuthatch, tufted titmouse, and downy woodpecker, all forest dwellers; eastern cottontail rabbit and whitetail deer, both mammals of value to hunters; and beaver. Other vertebrates were: Common Flicker, red-bellied woodpecker, red-headed woodpecker, black-capped chickadee, blue jay, common crow, cardinal, American goldfinch, and green frog.

The bottomland forest provides excellent hunting for squirrels, rabbit, and deer. In recent years, it has been noted that coyotes have increased in number (Pers. comm., Jim Powell) within this area. Duck hunting is also considered successful in this habitat. Presently, there are several duck blinds near the small sloughs adjacent to the District that are used by local residents.

Wildlife Potential

The bottomland forest, or riparian habitat, probably provides for a more diverse fauna than any other habitat type in the Hillview Drainage and Levee District. The presence of snags, sloughs, shrubs, forest edge, and greater area contribute to the habitability of this area. A number of forest-dwelling, aquatic and semi-aquatic amphibians and reptiles (Appendix Table C-1) are probably inhabitants. Smith (1961) lists the common amphibians and reptiles of the Upper Mississippi Border Division as: northern water snake, ringneck snake (forest species), black rat snake, eastern garter snake, and green frog. Common forest species are: american toad, box turtle, five-lined skink; aquatic and semi-aquatic species are leopard frog, bullfrog, painted turtles.

The number of birds found in bottomland habitats are greater than that of any other vertebrate class. Breeding species of central Illinois whose habitat speciality is bottomland forest are (Graber and Graber 1976): great blue heron, little green heron, red-shouldered hawk, warbling vireo, prothonotary warbler, parula warbler, cerulean warbler, yellow-throated warbler, and American redstart. Other forest-dwelling species in addition to those sighted during the field survey include (Figure 3) great crested flycatcher, turkey vulture, white-throated sparrow, and tree sparrow (the latter three are winter residents).

A greater number of Illinois mammals are also forest-dwelling and riparian species (Appendix Table C-4). Virginia opossum, short-tailed shrew, least shrew, eastern chipmunk, gray squirrel, fox squirrel, southern flying squirrel, deer mouse, white-footed mouse, pine vole, striped skunk, and bobcat are all forest dwellers. Those classified as riparian species are raccoon, short-tailed weasel, badger, and river otter. A number of bats are also found in forests, including silver-haired, big brown, red, evening, and eastern pipistrel bats. Two cave nesting species, the little brown and Keen's myotis, forage over rivers among bottomland forests.

3.4. Endangered and Threatened Plant and Animal Species

3.4.1. Plants

Only four endangered and threatened plant species have been reported from Greene and Scott Counties. These include Dodecantheon amethystinum, Hydrastis canadensis, Panax quinquefolius, and Tradescantia bracteata. None of these taxa were observed in the study area during the field reconnaissance. Also, none of the other endangered and threatened plant species listed for Illinois (Sheviak and Thom 1981) were observed.

It is very unlikely that endangered and threatened plant species occur in the study area since the habitats in which they usually occur are not present.

Listed below are the endangered and threatened plant species reported from Greene and Scott Counties with their habitat requirements and information about where the taxa have been collected in the two counties.

Dodecatheon amethystinum Fasset. is confined to limestone bluffs and wooded slopes. This taxon has not been reported from Scott County, but is known from one site in Greene County. Here it occurs on a wooded bluff and ravine 2 miles north of Eldred (Evers #22924, 22926, 56565).

Hydrastis canadensis L. is a species of mesic and wet-mesic upland forests. This taxon was reported from Reisch Woods in Greene County during the Illinois Natural Areas Inventory, and from woods in the southwest part of Scott County (Rexroat #6890).

Panax quinquefolius L. usually grows in rich, mesic, upland woods. It is known from one locality in Greene County where it was collected in a woods 4 miles south of Eldred (Winterringer #2241), and from one locality in Scott County where it was found in a woods near Exeter (Rexroat #3599).

Tradescantia bracteata Small. is confined to dry prairies, sand areas, and rarely disturbed sites. This taxon has been collected from two localities in Greene County. One site is along a railroad right-of-way near Roodhouse (Rexroat #9127), while the other is from a roadside in Woodville Twp. (Evers #3799). It has not been reported from Scott County. A composite list of Illinois listed endangered and threatened plant species is presented in Appendix E.

3.4.2. Animals

The State of Illinois lists just one endangered or threatened vertebrate species from Greene or Scott County. The criteria to determine the presence of listed species in a county are: for amphibians and reptiles, the species has been collected and is still likely to occur; birds, the species is known to have nested since 1975 and is still likely to occur, unsuccessful nesting attempts have been noted, or permanent summer residents are known; and for mammals, a species is definitely known to occur and is still likely to occur. A list of terrestrial and semi-aquatic vertebrates considered as threatened or endangered by the State of Illinois is given in Appendix E. The only species meeting the criteria in Greene or Scott County is the upland sandpiper (Bartramia longicauda) in Greene County. One endangered species, the bald eagle (Haliaeetus leucocephalus), has a wintering range which includes both counties, and Smith (1961) reported the eastern ribbon snake (Thamnophis sauritus) from the area.

One Illinois endangered species, the Marsh Hawk (Circus cyaneus), was observed within the Hillview Drainage and Levee District during the field reconnaissance. The individual observed was circling over the cultivated field bordering a drainage ditch. The shrubby vegetation along the ditch and stream banks are probably of little value to this particular raptor, a bird of open areas, and any further disturbance of the ditch banks would have little direct effect on the presence of the marsh hawk. Indirectly, it could affect nesting success of prey species which later move into the agricultural fields. The marsh hawk has never been reported along Breeding Bird Survey Routes 037 and 038 and the only nesting records are from Grundy and LaSalle Counties.

The upland sandpiper is a ground nesting species of dry grassland whose decrease in numbers is largely due to the disappearance of pastures and hayfields, usually replaced by row crops. It has not been reported along Breeding Bird Survey Routes 037 and 038 (1967-1980) nor in Greene and Scott Counties during the Spring Bird Counts (1975-1981). It is unlikely that this species occurs in the Hillview Drainage and Levee District.

More bald eagles winter in Illinois than in any other State (Ill. Dept. of Conservation 1980), roosting in trees in the Mississippi and Illinois river valleys. They are not known to nest in Greene or Scott County, but are likely winter residents as long as the water remains unfrozen. Increased flood protection would not likely affect this species unless riverfront trees were removed or if construction activities were concurrent with the presence of any wintering bald eagles.

No recent records of eastern ribbon snake have been reported for the State of Illinois, thus it is unlikely that this species occurs in the study area. Smith (1961) reported this species as common along the Mississippi River, and reported no records from Green and Scott Counties. The study area is on the edge of the known range.

3.5. State/Federal Managed Areas and Natural Areas

There are no State Refuges or Fish and Wildlife Management areas in the immediate vicinity of the Hillview Drainage and Levee District (pers. comm., Richard Lutz).

There are no identified Illinois Natural areas within the District. The closest Natural Areas lie immediately across the Illinois River in Pike County. These Natural areas are listed in Appendix F, and a brief description of each follows:

- Twin Culvert Cave is a Nature Conservancy Natural Area. It is probably most valuable as a migration rest stop for the Federal and State endangered gray myotis (Myotis grisescens). A diverse invertebrate fauna also inhabits this cave which supports a terrestrial and aquatic cave community.

- Pearl Limestone Quarry's significant feature is an abandoned mine within the quarry which serves as a migration rest stop for the gray myotis. The quarry also contains a significant limestone cliff.

- Pearl Prairie Geological Area contains an outstanding exposure of an Illinoian Delta.

- Pirate Knob Hill Prairie contains a significant limestone bluff and is inhabited by limestone cliff floral and faunal communities, including a population of timber rattlesnake. It is also the site of excavated Indian mounds.

4.0. SUMMARY AND RECOMMENDATIONS

Land in the Hillview Drainage and Levee District is used primarily for agricultural purposes. The major terrestrial habitats in the District are cultivated fields, shrubby vegetated areas adjacent to drainage ditches and bordering creeks, and a bottomland forest between the riverfront levee and the Illinois River. The bottomland forest is classified as a Palustrine Forested Wetland.

A total of 222 plant species and 40 vertebrate species were observed in the district. Of the vertebrates, 33 were avian, 5 were mammalian, and 2 were amphibian species.

The habitats most capable of supporting wildlife are the bottomland forest and the border vegetation adjacent to the ditches and creeks. Local residents use both of these habitats for hunting. The bottomland forest provides habitat for deer, squirrels, and other game species. The slough areas within the floodplain attract waterfowl and duck hunting is considered successful within the Hillview Drainage and Levee District. The border vegetation along the ditches and creeks provides cover for quail and rabbit. Quail is considered the most valuable game species within the District.

The aesthetic and wildlife habitat values of the ditches can be improved by maintaining the vegetation along the ditches by not plowing over with dredge spoil and by limiting the use of herbicides in these areas.

The bottomland forest and associated sloughs between the riverfront levee and the Illinois River should be left in their natural states. This is the only habitat in the Hillview Drainage and Levee District that has not been altered. Measures should be taken to preserve the integrity of this habitat during any future construction or improvement practices regarding the riverfront levee.

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6.0 RESUMES OF PRINCIPAL INVESTIGATORS

RESUME: John E. Ebinger

Current Position:	Professor of Botany, Eastern Illinois University Charleston, Illinois 61920
Home Address:	45 Heather Drive, Charleston, Illinois 61920
Date and Place of Birth:	2 June 1933, Cincinnati, Ohio
Education:	Undergraduate: Miami University, Oxford, Ohio Sept. 1951 - June 1955. B.A. degree with major in Botany. Graduate: Yale University, New Haven, Connecticut. M.S. Feb. 1958 - June 1959: Ph.D. June 1959 - June 1961. Botany with a concentration in Plant Taxonomy. Thesis: Taxonomy of the subgenus Pterodes, genus Luzula (Juncaceae). Advisor: Dr. John Reeder.
Teaching Experience:	Assistant Professor of Biology, Roanoke College 1962 - 1963. Assistant Professor of Botany, Eastern Illinois University 1963 - 1968. Associate Professor of Botany, Eastern Illinois University 1969 - 1972. Professor of Botany, Eastern Illinois University 1973 - present.
Marital Status:	Married - 4 children.
Military Service:	United States Air Force, 1st Lieutenant, Sept. 1955 - Jan. 1958.
Honors:	Society of Sigma Xi Phi Sigma Beta Beta Beta Bruce Fink Scholorship in Botany - Miami University Sheffield Fellowship - Yale University
Memberships and Other Activities:	New England Botanical Club American Society of Plant Taxonomists Southern Appalachian Botanical Club International Association for Plant Taxonomists Illinois State Academy of Science Association for Tropical Biology Indiana State Academy of Science Nature Conservancy Association for Systematic Collections Illinois Nature Preserves Commission

Research Experience:	Herbarium Assistant, Yale University 1958 -1961
	Expeditions to Panama: Summer 1959 -- Darien Region of Panama with Drs, William Stern, Kenton Chambers, and John Dwyer. Summer 1960 -- Barro Colorado Biological Station.
	Connecticut Agricultural Experiment Station, New Haven, Connecticut. NSF grant under the direction of S. W. Gould. The study concerned the possible use of computers in plant taxonomy and bibliography. June 1961 - Aug. 1962.
	Extensive field work in plant taxonomy and ecology in east-central Illinois. 1963 - present.
Grants and Research Contracts Received:	Eastern Illinois University Research Council: 1965-1974 Vegetation surveys of various forest areas in east-central Illinois. $3200.00 1969-1973 Vascular hydrophyes of Illinois $3800.00 1975-1976 Lycopodium communities in Illinois $700.00
	Illinois Academy of Science: 1978-1979 Vegetation Surveys $300.00
Consulting Activities:	WAPORA, Inc. Washington D.C. -- Taxonomy of vascular plants of North America and analysis of terrestrial systems.
	University of Illinois, Urbana, Ill. -- Consultant for the Illinois Natural Areas Inventory.
	Dairyland Power Cooperative, LaCrosse, Wisc. -- endangered and threatened species along powerline corridor.
Direction of Master's Degree Thesis:	More than 20 completed, all in the area of plant taxonomy and vegetation analysis.
Publications in the following areas (also see attached list):	Vegetation surveys of Illinois forests. Floristics of Illinois. Grass anatomy and its relationship to phylogeny. Systematics of Kalmia (Ericaceae). Vascular hydrophytes of Illinois.
Present Responsibilities:	Teach general Botany, Plant Systematics, Local Flora, and Economic Botany.
	Advisor to graduate students.
	Curator of the Stover Herbarium (40,000 specimens of vascular plants, mostly Illinois material).

PUBLICATIONS: (since 1974) John E. Ebinger

Culm morphology and grass systematics. Trans. Ill. St. Acad. Sci. 68:87-101. 1975. (with J. Carlen).

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Frequency of aquatic macrophytes in East-Central Illinois. Trans. Ill. St. Acad. Sci. (in Press).

Vegetation of glacial drift hill prairies in East-Central Illinois. Castanea (in press).

Rosetta Arrigo
Biologist
Chicago Regional Office

EDUCATION

B.A., Biology, Washington University, St. Louis, MO, 1976
M.A., Biology (Systematics & Ecology), emphasis in ornithology, Kansas University, Lawrence, KS, 1980

EXPERIENCE:

Ms. Arrigo has a background in terrestrial biology and in the application of computer techniques for compilation and statistical analysis of biological data. With WAPORA, she is responsible for technical input on the biological and ecological facets of impact studies. She is currently involved in a study of impacts of wastewater applications to wetlands.

She was previously employed in WAPORA's St. Louis office, where she was involved in all phases of biological studies. These projects included terrestrial inventories along the Illinois and Ohio Rivers, 316(b) studies at a fossil fueled power generating station, and an environmental inventory of section 10 and 404 permitted structures at Lake of the Ozarks, MO. Her duties included inventories and field identification of terrestrial vertebrates and quantitative description of plant communities; field collections of aquatic organisms; and laboratory identification of larval fish. She was co-manager of computer operations, which services several WAPORA offices. This entailed programming designed for data compilation, statistical data analysis, and production of report quality summary tables. She is proficient at programming in the BASIC and FORTRAN languages and has a strong background in biostatistics and multivariate data analysis.

During summer of 1981 she participated in field studies of communal breeding of the Acorn Woodpecker in the mountains of central New Mexico. This involved continuous observations and censusing of woodpecker breeding groups, tagging and banding individuals captured by various mist-netting techniques, and designing a data management computer program. She is familiar with the fauna and flora of the southwestern montane/desert regions as well as those of the Midwest and Great Plains.

Individual research efforts have included a study of the effects of parkland management and urbanization on avian habitat selection and population structure in parks of St. Louis, Missouri; this study was the basis for her masters' thesis. She has also participated in a study of avian foraging behavior and population in relation to vegetational composition in an eastern deciduous woodland.

Prior to joining WAPORA, Ms. Arrigo was employed at Kansas University's Museum of Natural History. She assisted in general museum curation and management of the ornithological collection. One of her responsibilities was input and maintenance of specimen records on computer tape, whereby the entire collection catalog could be sorted and accessed by various programs.

PROFESSIONAL AFFILIATIONS:

American Ornithologists' Union
Kansas Ornithological Society
Wilson Ornithological Society

PAPERS PRESENTED

Habitat partitioning by birds in urban parks. Kansas Ornithological Society meeting, 1979.

Parkland management, habitat diversity, and bird communities of urban parks of St. Louis, Missouri. American Ornithologists' Union Meeting, 1980.

PUBLICATIONS

Stacey, P. B., R. D. Arrigo, T. C. Edwards, and N. Joste. Northeastern extension of the breeding range of the Elf Owl in New Mexico. In press.

Richard N. Kubb
Associate Biologist

EDUCATION

B.S. in Marine Biology, 1976, University of North Carolina-Wilmington
M.A. in Biology, 1979, State University College, Buffalo, New York

EXPERIENCE

Mr. Kubb is an experienced aquatic biologist. He has expertise in the taxonomy and ecology of adult and larval fish and benthic macroinvertebrates and has participated in numerous aquatic ecological programs on major lakes and rivers in the Midwest. These include Lake of the Ozarks, MO., and the Ohio, Wabash, Illinois, Kaskaskia, Mississippi, and Missouri Rivers and their tributaries.

Mr. Kubb has conducted 316(a) and (b) investigations of the effects of electric generating systems on fish populations. He has applied mathematical and empirical modeling techniques to aid in assessment of power plant impacts on ichthyoplankton populations.

Mr. Kubb is responsible for the coordination of computerized data processing for the Biological Sciences of WAPORA, Inc. He has experience in systems modeling and in the application of computers to ecological data. He has a firm background in bio-statistics and is adept in statistical and overall experimental design.

Prior to joining WAPORA, Mr. Kubb held the position of Research Associate in the laboratory of Dr. James R. Spotila at State University College at Buffalo. His responsibilities included participation in the writing and review of research proposals and technical reports, maintenance of research instrumentation, and direction of laboratory computer modeling on an IBM 370/158 computer, Cromemco Z2D microprocessor, and Hewlett Packard 9810 desktop calculator.

While at the State College at Buffalo, Mr. Kubb participated in the following research activities: modeling of heat exchange and body temperature change in largemouth bass; field survey of the fishes of Genesee County, New York; evaporative water loss in the American alligator; effects of heating and cooling on localized blood flow in American alligator; seasonal study of the near-shore micro-climate of a thermally altered habitat.

PROFESSIONAL AFFILIATIONS

American Association for the Advancement of Science
American Fisheries Society
American Society of Ichthyologists and Herpetologists
American Society of Zoologists
Sigma Xi

TECHNICAL REPORTS

Principal Authorship

Kubb, R.N. and J.R. Spotila. 1979. Mechanisms of heat exchange and time-dependent modeling of body temperature in the largemouth bass, Micropterus salmoides. Physiological Zoology. 53(2):222-239

TECHNICAL ASSISTANCE

WAPORA, Inc. 1981. Aquatic Biological Inventory, Hartwell Drainage and Levee District, Greene County, Illinois. Report Prepared for St Louis District Corps of Engineers.

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_____. 1981. Environmental Inventory and Assessment of Sections 10 and 404 Permitted Structures, and Fish Reproduction at Lake of the Ozarks, Missouri. Prepared for the Kansas City District Corps of Engineers.

Appendix A. Composite taxa list of all plants observed in the Hillview Drainage and Levee District, Scott and Green Counties, Illinois, 9-10 October 1981. Nomenclature follows Mohlenbrock (1975).

ACERACEAE
Acer negundo L. (Box Elder)
Acer saccharinum L. (Silver Maple)
Acer saccharum Marsh. (Sugar Maple)

AIZOACEAE
Mollugo verticillatus L. (Carpet Weed)

AMARANTHACEAE
Amaranthus albus L. (Tumbleweed)
Amaranthus hybridus L. (Green Amaranth)
Amaranthus retroflexus L. (Rough Pigweed)
Amaranthus spinosus L. (Spiny Pigweed)
Amaranthus tamariscinus Nutt.

ACANTHACEAE
*Rhus glabra L. (Smooth Sumac)
*Toxicodendron radicans (L.) Kuntze. (Poison Ivy)

ANNONACEAE
*Asimina triloba (L.) Dunal. (Pawpaw)

APOCYNACEAE
Apocynum cannabinum L. (Indian Hemp, Dogbane)

AQUIFOLIACEAE
Ilex decidua Walt. (Swamp Holly)

BALSAMINACEAE
Impatiens biflora Walt. (Spotted Touch-me-not)

BIGNONIACEAE
*Campsis radicans (L.) Seem. (Trumpet-creeper)
Catalpa speciosa Warder.

CAMPANULACEAE
Lobelia inflata L. (Indian Tobacco)
Lobelia siphilitica L. (Great Blue Lobelia)

CAPRIFOLIACEAE
*Lonicera maackii Maxim. (Amur Honeysuckle)
*Sambucus canadensis L. (Common Elder)
*Symphoricarpos orbiculatus Moench. (Coral Berry, Buckbrush)

CARRYOPHYLLACEAE
Lychnis alba Mill. (Evening Campion)

* Mast-or fruit-producer

\+ Common duck food plant (Anderson 1959)

CELASTRACEAE
*Celastrus scandens L. (Climbing Bittersweet)

CERATOPHYLLACEAE
+ Ceratophyllum demersum L. (Hornwort)

CHENOPODIACEAE
Chenopodium album L. (Lamb's Quarters)
Chenopodium ambrosioides L. (Mexican Tea)

COMMELINACEAE
Commelina communis L. (Dayflower)
Tradescantia ohiensis Raf.

COMPOSITAE
Achillea millefolium L. (Yarrow, Milfoil)
Ambrosia artemisiifolia L. (Common Ragweed)
Ambrosia trifida L. (Giant Ragweed)
Aster lateriflorus (L.) Britt. (Starved Aster)
Aster ontarionis Wieg. (Ontario Aster)
Aster sagittifolius Wedem. ex Willd. var. drummondii (Lindl.) Shinners. (Arrow-leaved Aster)
Aster simplex Willd. (Painted Aster)
Bidens aristosa L. (Western Tickseed-sunflower)
Bidens cernua L. (Smaller Bur-marigold)
Bidens comosa (Gray) Wieg. (Leafy-bracted Tickseed)
Bidens frondosa L. (Stick-tight)
Cichorium intybus L. (Chicory)
Eclipta alba (L.) Hassk. (Yerba de tajo)
Erigeron annuus (L.) Pers. (Whitetop)
Erigeron canadensis L. (Horseweed)
Eupatorium rugosum Houtt. (White Snakeroot)
Eupatorium serotinum Michx. (Late Boneset)
Helianthus annuus L. (Garden Sunflower)
Helianthus tuberosus L. (Jerusalem artichoke)
Lactuca floridana (L.) Gaertn. (Woodland Lettuce)
Pyrrhopappus carolinianus (Walt.) DC. (Leafy-stemmed False Dandelion)
Rudbeckia hirta L. (Black-eyed Susan)
Rudbeckia laciniata L. (Goldenglow)
Solidago canadensis L. (Goldenrod)
Taraxacum officinale Weber. (Dandelion, common)
Xanthium strumarium L. (Cocklebur)

CONVOLVULACEAE
Calystegia sepium (L.) R. Br.
Convolvolus arvensis L. (Field Bindweed)
Ipomoea hederacea (L.) Jacq. (Ivy-leaved Morning-glory)
Ipomoea lacunosa L. (Small-flowered Morning-glory)
Ipomoea pandurata (L.) G. F. W. Mey. (Wild Sweet-potato)

CORNACEAE
*Cornus drummondii C. A. Mey. (Rough-leaved dogwood)

CRUCIFERAE
Barbarea vulgaris R. Br. (Common Wintercress)
Capsella bursa-pastoris (L.) Medic. (Shepherd's Purse)

Cardamine parviflora L. var. arenicola (Britt.) O.E. Schulz. (Small-flowered Bittercress)
Cardamine pensylvanica Muhl. (Pennsylvania Bitter-cress)
Lepidium virginicum L.
Rorippa sessiliflora (Nutt.) Hitchc. (Sessile-flowered Cress)
Thlaspi arvense L. (Field Pennycress)

CUCURBITACEAE
Sicyos angulatus L. (Bur-cucumber)

CUPRESSACEAE
*Juniperus virginiana L. (Eastern Red Cedar)

CYPERACEAE
+Cyperus esculentus L. (Yellow Nut-Grass)
Cyperus flavescens L.
+Cyperus strigosus L. (Straw-colored Cyperus)

EBENACEAE
*Diospyros virginiana L. (Persimmon)

EQUISETACEAE
Equisetum arvense L. (Field Horsetail)

EUPHORBIACEAE
Acalypha gracilens Gray. (Slender Three-seeded Mercury)
Acalypha ostryaefolia Riddell.
Acalypha rhomboidea Raf. (Three-seeded Mercury)
Acalypha virginica L. (Virginia Three-seeded Mercury)
Chamaesyce maculata (L.) Small. (Nodding Spurge)
Chamaesyce supina (Raf.) Moldenke. (Milk Spurge)
Poinsettia dentata (Michx.) Kl. & Garcke. (Toothed Spurge)

FAGACEAE
*Quercus palustris Muenchh. (Pin Oak)

GERANIACEAE
Geranium carolinianum L. (Craneshill)
Geranium maculatum L. (Wild Geranium)

HYDROCHARITACEAE
Elodea nuttallii (Planch.) St. John. (Slender Waterweed)

JUGLANDACEAE
*Carya cordiformis (Wang.) K. Koch. (Bitternut Hickory)
*Carya illinoensis (Wang.) K. Koch. (Pecan)
*Juglans nigra L. (Black Walnut)

LABIATAE
Agastache nepetoides (L.) Ktze. (Giant Hyssop)
Leonurus cardiaca L. (Motherwort)
Lycopus uniflorus Michx. (N. Bugle Weed)
Perrilla frutescens L. (Beef-steak Plant)
Physostegia speciosa (Sweet) Sweet. (Dragon-head)
Prunella vulgaris L. (Self-heal)

Stachys tenuifolia Willd. (Smooth Hedge Nettle)
Teucrium canadense L. (American Germander)

LEGUMINOSAE
*Amorpha fruticosa L. (Indigo Bush)
Cassia fasciculata Michx. (Partridge-Pea)
Cassia marilandica L. (Wild Senna)
*Gleditsia triacanthos L. (Honey Locust)
Medicago lupulina L. (Black Medick)
Medicago sativa L. (Alfalfa)
Melilotus alba Desr. (White Sweet Clover)
Trifolium hybridum L. (Alsike Clover)
Trifolium pratense L. (Red Clover)
Trifolium repens L. (White Clover)

LEMNACEAE
Lemna minor L. (Lesser Duckweed)

MALVACEAE
Abutilon theophrastii Medic. (Velvet-leaf)
Hibiscus militaris Cav. (Halberd-leaved Rose Mallow)
Sida spinosa L. (Prickly Sida)

MENISPERMACEAE
*Menispermum canadense L. (Moonseed)

MORACEAE
Humulus japonicus Sieb. & Zucc. (Japanese Hop)
*Maclura pomifera (Raf.) Schneider. (Osage Orange)
*Morus alba L. (White Mulberry)
*Morus rubra L. (Red Mulberry)

NYCTAGINACEAE
Mirabilis nyctaginea (Michx.) MacM. (Umbrella-wort)

OLEACEAE
*Forestiera acuminata (Michx.) Poir.
Fraxinus pensylvanica Marsh. var. subintegerrima (Vahl.) Fern. (Green Ash)

ONAGRACEAE
Oenothera biennis L. (Common Evening-primrose)
Oenothera laciniata Hill. (Cut-leaved Evening-primrose)

OPHIOGLOSSACEAE
Botrychium virginianum (L.) Sw. (Rattlesnake fern)

OXALIDACEAE
Oxalis dillenii Jacq.
Oxalis stricta L. (Common Wood Sorrel)

PHYTOLACCACEAE
Phytolacca americana L. (Pokeweed)

PLANTAGINACEAE

Plantago aristata Michx. (Bracted Plantain)
Plantago lanceolata L. (Buckthorn Plantain)
Plantago rugelii Dcne. (Common Plantain)

PLATANACEAE

Platanus occidentalis L. (Sycamore)

POACEAE

Agrostis alba L. (Redtop)
Andropogon virginicus L. (Broom-sedge)
Bromus inermis Leyss. (Smooth Brome)
Bromus tectorum L. (Downy Cheat)
Digitaria ischaemum (Schreb.) Muhl. (Smooth Crabgrass)
Digitaria sanguinalis (L.) Scop. (Common Crabgrass)
+ Echinochloa crus-galli (L.) Beauv. (millet)
Echinochloa pungens (Poir.) Rydb.
Eleusine indica (L.) Gaertn. (Goose Grass)
Elymus virginicus L. (Terrell-grass)
Eragrostis cilianensis (All.) Mosher. (Stink Grass)
Eragrostis frankii C. A. Meyer. (Frank's Lovegrass)
Eragrostis pectinacea (Michx.) Nees. (Purple Lovegrass)
Eragrostis spectabilis (Pursh) Steud. (Tumble Grass)
Festuca pratensis Huds.
Hordeum jubatum L. (Squirrel-tail Grass)
+ Leersia oryzoides (L.) Swartz. (White Grass)
Leersia virginica Willd. (Cut Grass)
Muhlenbergia frondosa (Poir.) Fern. (Common Satin Grass)
Muhlenbergia schreberi J. F. Gmel. (Nimble Will)
Panicum capillare L. (Witch Grass)
Panicum dichotomiflorum Michx. (Fall Panicum)
Panicum lanuginosa Ell. (Hairy Panic Grass)
Paspalum ciliatifolium Michx. (Hairy Lens Grass)
Phalaris arundinacea L. (Reed Canary Grass)
Poa annua L. (Annual Blue Grass)
Poa pratensis L. (Timothy)
Setaria faberi Herrm. (Giant Foxtail)
Setaria lutescens (Weigel) Hubb. (Yellow Foxtail)
Setaria viridis (L.) Beauv. (Green Foxtail)
Spartina pectinata Lind. (Cord Grass)
Sporobolus aspera (Michx.) Kunth. (Long-leaved Rush Grass)
Tridens flavus (L.) Hitchcock. (Purpletop)

POLYGONACEAE

Polygonum aviculare L. (Common Knotweed)
+ Polygonum coccineum Muhl. (Black Bindweed)
Polygonum hydropiperoides Michx. (Mild Water Pepper)
+ Polygonum lapathifolium L. (Pale Smartweed)
+ Poligonum pensylvanicum L. (Pennsylvania Knotweed)
Polygonum persicaria L. (Lady's Thumb)
Polygonum punctatum Ell. (Dotted Smartweed)
Polygonum scandens L. (Climbing False Buckwheat)
Polygonum virginianum L. (Virginia Knotweed)

Rumex acetosella L. (Field Sorrel)
Rumex crispus L. (Curly Dock)

PORTULACACEAE
Portulaca oleracea L. (Purslane)

POTAMOGETONACEAE
Potamogeton foliosus Raf. (Leafy Pondweed)
+ Potamogeton nodosus Poir. (Long-leaved Pondweed)

PRIMULACEAE
Lysimachia nummalaria L. (Moneywort)

ROSACEAE
*Crataegus viridis L. (Southern Thorn)
Fragaria virginiana Duchesne. (Cultivated Strawberry)
Potentilla simplex Michx. (Common Cinquefoil)
*Prunus americana Marsh. (Wild Plum)
*Prunus serotina Ehrh. (Wild Black Cherry)
Rosa carolina L. (Pasture Rose)
*Rosa multiflora Thunb. (Multiflora Rose)
*Rubus allegheniensis Porter. (Mountain Blackberry)
*Rubus flagellaris Willd. (Dewberry)
*Rubus occidentalis L. (Black Raspberry)

RUBIACEAE
+ Cephalanthus occidentalis L. (Buttonbush)
Galium aparine L. (Cleavers)
Spermacoce glabra Michx. (Smooth Buttonweed)

RUTACEAE
Ptelea trifoliata L. (Wafer-ash)

SALICACEAE
Populus deltoides Marsh. (Eastern Cottonwood)
Salix amygdaloides Andress. (Peach-leaved Willow)
Salix interior Rowlee. (Sandbar Willow)
Salix nigra Marsh. (Black Willow)

SCROPHULARIACEAE
Conobea multifida (Michx.) Benth.
Lindernia dubia (L.) Pennell. (Pimpernel)
Scrophularia marilandica L. (Figwort)
Verbascum blattaria L. (Moth Mullen)
Verbascum thapsus L. (Great Mullen)

SMILACACEAE
*Similax hispida Muhl.

SOLANACEAE
Datura stramonium L. (Jimson Weed)
Physalis subglabrata Mack. & Bush. (Tall Ground Cherry)
Solanum americanum Mill. (Black Nightshade)

Solanum carolinense L. (Horse Nettle)
Solanum rostratum Dunal. (Buffalo Bur)

ULMACEAE
*Celtis laevigata Willd. (Sugarberry)
*Celtis occidentalis L. (Hackberry)
Ulmus americana L. (White Elm)
Ulmus rubra Muhl. (Slippery Elm)

UMBELLIFERAE
Conium maculatum L. (Poison-hemlock)
Daucus carota L. (Carrot)
Pastinaca sativa L. (Wild Parsnip)
Sanicula canadensis L. (Short-styled Snakeroot)

URTICACEAE
Laportea canadensis (L.) Wedd. (Wood Nettle)
Pilea pumila (L.) Gray. (Clearweed)
Urtica dioica L. (Stinging Nettle)

VERBENACEAE
Lippia lanceolata Michx. (Fog Fruit)
Verbena urticifolia L. (White Vervain)

VIOLACEAE
Voila pratincola Greene.

VITACEAE
*Ampelopsis cordata Michx. (Raccoon-grape)
*Vitis vulpina L. (Frost Grape)

Appendix B. Composite taxa list of all terrestrial and semi-aquatic vertebrates observed in the Hillview Drainage and Levee District, Greene and Scott Counties, Illinois, 9-10 October 1981.

CLASS Order Family	
AMPHIBIA	
Salientia	
Rana clamitans melanota	Green frog
Rana pipiens pipiens	Northern leopard frog
AVES	
Podicipediformes	
Podicipedidae	
Podilymbus podiceps	Pied-billed grebe
Ciconiiformes	
Ardeidae	
Ardea herodias	Great blue heron
Falconiformes	
Cathartidae	
Cathartes aura	Turkey vulture
Accipitridae	
Buteo jamaicensis	Red-tailed hawk
Circus cyaneus	Marsh hawk
Falconidae	
Falco sparverius	American kestrel
Charadriiformes	
Charadriidae	
Charadrius vociferus	Killdeer
Columbiformes	
Columbidae	
Columba livia	Rock dove
Zenaida macroura	Mourning dove
Coraciiformes	
Alcedinidae	
Megaceryle alcyon	Belted kingfisher
Piciformes	
Picidae	
Colaptes auratus	Common flicker
Melanerpes carolinus	Red-bellied woodpecker
Melanerpes erythrocephalus	Red-headed woodpecker
Picoides villosus	Hairy woodpecker
Picoides pubescens	Downy woodpecker

Passeriformes	
Tyrannidae	
Contopus virens	Eastern wood pewee
Alaudidae	
Eremophila alpestris	Horned lark
Hirundinidae	
Hirundo rustica	Barn swallow
Corvidae	
Cyanocitta cristata	Blue jay
Corvus brachyrhynchos	Common crow
Paridae	
Parus atricapillus	Black-capped chickadee
Parus bicolor	Tufted titmouse
Sittidae	
Sitta carolinensis	White-breasted nuthatch
Troglodytidae	
Troglodytes aedon	House wren
Turdidae	
Turdus migratorius	American robin
Sturnidae	
Sturnus vulgaris	European starling
Ploceidae	
Passer domesticus	House Sparrow
Icteridae	
Agelaius phoeniceus	Red-winged blackbird
Fringillidae	
Cardinalis cardinalis	Cardinal
Carduelis tristis	American goldfinch
Junco hyemalis	Dark-eyed junco
Zonotrichia albicollis	White-throated sparrow
Melospiza melodia	Song sparrow
MAMMALIA	
Rodentia	
Sciuridae	
Sciurus carolinensis	Eastern gray squirrel
Castoridae	
Castor canadensis	Beaver
Cricetadae	
Ondatra zibethicus	Muskrat

Lagomorpha	
Leporidae	
Sylvilagus floridanus	Eastern cottontail
Artiodactyla	
Cervidae	
Odocoileus virginianus	Whitetail deer

Appendix C. Composite taxa lists of terrestrial and semi-aquatic vertebrates whose ranges include Greene and Scott Counties, Illinois or geographical regions within the State of Illinois which include Greene and Scott Counties.

Appendix Table C-1. Composite taxa list of amphibians and reptiles that have been collected from or whose ranges include Greene and Scott Counties, Illinois, and key to their preferred habitat types (from Smith 1961; nomenclature follows Collins et al. 1978).

Scientific Name	Common Name	Habitat[1]
Order Caudata (Salamanders)		
Ambystoma texanum	Small-mouthed salamander	WPC
Ambystoma tigrinum tigrinum	Tiger salamander	C
Siren intermedia nettingi	Western lesser siren	A
Order Salientia (Frogs and Toads)		
Bufo americanus americanus	Eastern american toad	WPC
Bufo americanus charlesmithi	Dwarf american toad	W
Bufo woodhousei fowleri	Fowler's toad	PR
Acris crepitans blanchardi	Blanchards' cricket frog	MAP
Pseudacris triseriata triseriata	Western chorus frog	CPM
Hyla versicolor versicolor	Eastern gray treefrog	W
Rana areolata circulosa	Northern crawfish frog	P
Rana catesbeiana	Bullfrog	A
Rana clamitans melanota	Green frog	A
Rana palustris	Pickerel frog	A
Rana pipiens pipiens	Northern leopard frog	ACM
Rana sphenocephala	Southern leopard frog	AC
Order Testudines (Turtles)		
Chelydra serpentina	Common snapping turtle	A
Macroclemys temminicki	Alligator snapping turtle	A
Sternotherus odoratus	Stinkpot	A
Terrapene carolina carolina	Eastern box turtle	WM
Terrapene ornata ornata	Ornate box turtle	P
Chrysemys picta marginata	Midland painted turtle	A
Chrysemys picta belli	Western painted turtle	A
Chrysemys scripta elegans	Red-eared turtle	A
Graptemys pseudogeographica	False map turtle	A
Graptemys geographica	Map turtle	A
Trionyx spiniferus spiniferus	Eastern spiny soft shell	A
Trionyx muticus muticus	Smooth softshell	A
Suborder Sauria (Lizards)		
Ophisaurus attenuatus	Western slender glass lizard	P
Cnemidophorus s. sexlineatus	Six-lined racerunner	P
Eumeces fasciatus	Five-lined skink	W
Eumeces laticeps	Broad-headed skink	W
Suborder Serpentes (Snakes)		
Carphophis amoenus helenae	Midwest worm snake	F
Diadophis punctatus edwardsi	Northern ringneck snake	PW
Heterodon platyrhinos	Eastern hognose snake	PE
Opheodrys aestivus	Rough green snake	E
Coluber constrictor flaviventris	Eastern yellow-bellied racer	EPC

Appendix Table C-1 (concluded).

	Scientific Name	Common Name	Habitat
	Elaphe obsoleta obsoleta	Black rat snake	PW
	Pituophis melanoleucus sayi	Bullsnake	PW
	Lampropeltis c. calligaster	Prairie kingsnake	P
	Lampropeltis getulis holbrooki	Speckled kingsnake	W
	Lampropeltis t. triangulum	Eastern milksnake	W
	Lampropeltis triangulum syspila	Red milksnake	W
(E)	Thamnophis sauritus	Eastern ribbon snake	M
	Thamnophis sirtalis sirtalis	Eastern garter snake	SE
	Storeria dekayi wrightorum	Midland brown snake	WPE
	Nerodia erythrogaster flavigaster	Yellow-bellied water snake	A
	Nerodia grahami	Graham's water snake	A
	Nerodia rhombifera rhombifera	Diamondback water snake	A
	Nerodia sipedon sipedon	Northern water snake	A
	Nerodia sipedon pleuralis	Midland water snake	A
	Agkistrodon contortrix	Northern copperhead	W
	Sistrurus catentatus	Eastern massasauga	M
	Crotalis horridus	Timber rattlesnake	W

(E) Illinois State Endangered Species

[1] Preferred habitat is given as follows: A = Aquatic habitat; C = Cultivated; E = Edge; F = Fossorial; M = Marsh or Swamp; P = Prairie, Field, or Grassland; R = Riparian S = Shrub; W = Woodland.

Appendix Table C-2. Composite taxa list of all breeding birds noted along Breeding Bird Survey Route 037, Greene County, Illinois and Route 038, Morgan, Scott, and Greene Counties, Illinois, 1967 - 1980. (Nomenclature follows American Ornithologists' Union 1967; 1973; 1976.)

Order / Family / Species	
Podicipediformes	
Ardea herodias	Great Blue Heron
Butorides striatus	Green Heron
Anserformes	
Anas platyrhynchos	Mallard
Aix sponsa	Wood Duck
Falconiformes	
Cathartes aura	Turker Vulture
Buteo jamaicensis	Red-tailed Hawk
Falco sparverius	American Kestrel
Galliformes	
Colinus virginianus	Bobwhite
Phasianus colchicus	Ring-necked Pheasant
Charadriiformes	
Charadrius vociferus	Killdeer
Columbiformes	
Columba livia	Rock Dove
Zenaida macroura	Mourning Dove
Cuculiformes	
Coccyzus americanus	Yellow-billed Cuckoo
Coccyzus erythropthalmus	Black-billed Cuckoo
Strigiformes	
Bubo virginianus	Great Horned Owl
Strix varia	Barred Owl
Caprimulgiformes	
Caprimulgus vociferus	Whip-poor-will
Chordeiles minor	Common Nighthawk
Apodiformes	
Chaetura pelagica	Chimney Swift
Archilochus colubris	Ruby-throated Hummingbird
Coraciiformes	
Megaceryle alcyon	Belted Kingfisher

Appendix Table C-2 (continued).

Piciformes	
Colaptes auratus	Common Flicker
Dryocopus pileatus	Pileated Woodpecker
Melanerpes carolinus	Red-bellied Woodpecker
Melanerpes erythrocephalus	Red-headed Woodpecker
Picoides pubescens	Downy Woodpecker
Picoides villosus	Hairy Woodpecker
Passeriformes	
Tyrannidae	
Tyrannus tyrannus	Eastern Kingbird
Myiarchus crinitus	Great Crested Flycatcher
Sayornis phoebe	Eastern Phoebe
Empidonax virescens	Acadian Flycatcher
Empidonax traillii	Willow Flycatcher
Contopus virens	Eastern Wood Pewee
Alaudidae	
Eremophila alpestris	Horned Lark
Hirundinidae	
Riparia riparia	Bank Swallow
Stelgidopteryx ruficollis	Rough-winged Swallow
Hirundo rustica	Barn Swallow
Progne subis	Purple Martin
Corvidae	
Corvus brachyrhynchos	Common Crow
Cyanocitta cristata	Blue Jay
Paridae	
Parus atricapillus	Black-capped Chickadee
Parus bicolor	Tufted Titmouse
Sittidae	
Sitta carolinensis	White-breasted Nuthatch
Troglodytidae	
Troglodytes aedon	House Wren
Thryothorus ludovicianus	Carolina Wren
Cistothorus platensis	Short-billed Marsh Wren
Mimidae	
Mimus polyglottos	Mockingbird
Dumatella carolinensis	Gray Catbird
Toxostoma rufum	Brown Thrasher
Turdidae	
Turdus migratorius	American Robin
Sialia sialus	Eastern Bluebird
Hylocichla mustelina	Wood Thrush

Appendix Table C-2 (continued).

Sylviidae	
Polioptila caerulea	Blue-gray Gnatcatcher
Bambycillidae	
Bombycilla cedrorum	Cedar Waxwing
Laniidae	
Lanius ludovicianus	Loggerhead Shrike
Sturnidae	
Sturnus vulgaris	European Starling
Vireonidae	
Vireo griseus	White-eyed Vireo
Vireo belli	Bell's Vireo
Vireo flavifrons	Yellow-throated Vireo
Vireo olivaceus	Red-eyed Vireo
Vireo gilvus	Warbling Vireo
Parulidae	
Protonotaria citrea	Prothonotary Warbler
Parula americana	Parula Warbler
Dendroica petechia	Yellow Warbler
Dendroica cerulea	Cerulean Warbler
Oporornis formosus	Kentucky Warbler
Geothlypis trichas	Common Yellowthroat
Icteria virens	Yellow-breasted Chat
Setophaga ruticilla	American Redstart
Ploceidae	
Passer domesticus	House Sparrow
Passer montanus	European Tree Sparrow
Icteridae	
Sturnella magna	Eastern Meadowlark
Sturnella neglecta	Western Meadowlark
Agelaius phoeniceus	Red-winged Blackbird
Icterus spurius	Orchard Oriole
Icterus galbula	Northern Oriold
Quiscalus quiscula	Common Grackle
Molothrus ater	Brown-headed Cowbird
Thraupidae	
Piranga olivacea	Scarlet Tanager
Piranga rubra	Summer Tanager
Fringillidae	
Cardinalis cardinalis	Cardinal
Pheucticus ludovicianus	Rose-breasted Grosbeak
Passerina caerulea	Blue Grosbeak
Passerina cyanea	Indigo Bunting

Appendix Table C-2 (concluded).

Spiza americana	Dickcissel
Carduelis tristis	American Goldfinch
Pipilo erythrophthalmus	Rufous-sided Towhee
Passerculus sandwichensis	Savannah Sparrow
Ammodramus savannarum	Grasshopper Sparrow
Passerherbulus caudacutus	LeConte's Sparrow
Chondestes grammacus	Lark Sparrow
Pooecetes gramineus	Vesper Sparrow
Spizella passerina	Chipping Sparrow
Spizella pusilla	Field Sparrow
Melospiza melodia	Song Sparrow

Appendix Table C-3. Avian species indigenous to Illinois (Bohlen 1978), * indicates breeding and wintering species in the central region of Illinois (Graber and Graber 1963; 1976).

Seasonal status and abundance of avifauna that may occur in the study area:

NSR - Non breeding summer resident
PW - Postbreeding wanderers
V - Vagrant
S - Straggler
E - Escapes
I - Introduced
H - Hypothetical

E - Extirpated
Ex - Extinct
M - Migrant
PR - Permanent Resident
SR - Summer Resident
WR - Winter Resident
* - Observed in central region of Illinois

FE - Federally Endangered
FT - Federally Threatened
SE - State Endangered
ST - State Threatened

a - abundant
c - common
fc - fairly common
u - uncommon
o - occasional
r - rare
vr - very rare

Species	Status	Abundance
GAVIIFORMES: Loons		
Common Loon (*Gavia immer*)	M	u
Arctic Loon (*Gavia arctica*)	V	vr
Red-throated Loon (*Gavia stellata*)	M	r
PODICIPEDIFORMES: Grebes		
Red-necked Grebe (*Podiceps grisegena*)	M	r
Horned Grebe (*Podiceps auritus*)	M	c
Eared Grebe (*Podiceps nigricollis*)	M	r
Western Grebe (*Aechmophorus occidentalis*)	M	r
*Pied-billed Grebe (*Podilymbus podiceps*)	M	c
PELECANIFORMES: Pelicans, Cormorants and allies		
White Pelican (*Pelecanus erythrorhynchos*)	M	r
Brown Pelican (*Pelecanus occidentalis*)	M	vr
Double-crested Cormorant (*Phalacrocorax auritus*)	M,SE	d
Olivaceous Cormorant (*Phalacrocorax olivaceus*)	M	vr
Anhinga (*Anhinga anhinga*)	M	vr
Magnificent Frigate-bird (*Fregata magnificens*)	H	-

Appendix Table C-3 (continued).

Species	Status	Abundance
CICONIIFORMES: Herons, Bitterns, Ibises and allies		
*Great Blue Heron (*Ardea herodias*)	SR	c
*Green Heron (*Butorides striatus*)	SR	c
Little Blue Heron (*Florida caerulea*)	M,SE	o
*Cattle Egret (*Bubulcus ibis*)	M	fc
Reddish Egret (*Dichromanassa rufescens*)	H	-
*Great Egret (*Casmerodius albus*)	M,SE	u
Snowy Egret (*Egretta thula*)	M,SE	r
Louisiana Heron (*Hydranassa tricolor*)	V	vr
*Black-crowned Night Heron (*Nycticorax nycticorax*)	M,SE	fc
*Yellow-crowned Night Heron (*Nyctanassa violacea*)	M	o
*Least Bittern (*Ixobrychus exilis*)	M	u
*American Bittern (*Botaurus lentiginosus*)	M,SE	u
Wood Stork (*Mycteria americana*)	V	vr
Glossy Ibis (*Plegadis falcinellus*)	V	r
White-faced Ibis (*Plegadis chihi*)	V	vr
White Ibis (*Eudocimus albus*)	V	vr
Roseate Spoonbill (*Ajaia ajaja*)	E	-
American Flamingo (*Phoenicopterus ruber*)	H	-
ANSERIFORMES: Swans, Geese and Ducks		
Mute Swan (*Cygnus olor*)	M	vr
Whistling Swan (*Olor columbianus*)	M	r
Trumpeter Swan (*Olor buccinator*)	E	-
*Canada Goose (*Branta canadensis*)	M	c
White-fronted Goose (*Anser albifrons*)	M	r
Bar-headed Goose (*Anser indicus*)	H	-
Snow Goose (*Chen caerulescens*)	M	c
Ross' Goose (*Chen rossii*)	V	vr
Black-bellied Whistling Duck (*Dendrocygna autumnalis*)	H	-
Fulvous Whistling Duck (*Dendrocygna bicolor*)	V	vr
*Mallard (*Anas platyrhynchos*)	M, SR	a
Black Duck (*Anas rubripes*)	M	fc
Gadwall (*Anas strepera*)	M	fc
Pintail (*Anas acuta*)	M	c
Bahama Duck (*Anas bahamensis*)	H	-

Appendix Table C-3 (continued).

Species	Status	Abundance
ANSERIFORMES: (continued)		
Green-winged Teal (*Anas crecca*)	M	fc
* Blue-winged Teal (*Anas discors*)	M, SR	c
Cinnamon Teal (*Anas cyanoptera*	V	r
European Wigeon (*Anas penelope*)	V	vr
American Wigeon (*Anas americana*)	M	c
Northern Shoveler (*Anas clypeata*)	M	c
*Wood Duck (*Aix sponsa*)	M, SR	c
Redhead (*Aythya americana*)	M	c
Ring-necked Duck (*Aythya collaris*)	M	u
Canvasback (*Aythya valisineria*)	M	fc
Greater Scaup (*Aythya marila*)	M	r
Lesser Scaup (*Aythya affinis*)	M	a
Tufted Duck (*Aythya fuligula*)	V	vr
Common Goldeneye (*Bucephala clangula*)	M	c
Barrow's Goldeneye (*Bucephala islandica*)	M	r
Bufflehead (*Bucephala albeola*)	M	fc
Oldsquaw (*Clangula hyemalis*)	M	r
Harlequin Duck (*Histrionicus histrionicus*)	M	r
Common Eider (*Somateria mollissima*)	V	vr
King Eider (*Somateria spectabilis*)	WR	vr
White-winged Scoter (*Melanitta deglandi*)	M, WR	r
Surf Scoter (*Melanitta perspicillata*)	M	r
Black Scoter (*Melanitta nigra*)	M	r
Ruddy Duck (*Oxyura jamaicensis*)	M	c
*Hooded Merganser (*Lophodytes cucullatus*)	M	u
Common Merganser (*Mergus merganser*)	M, WR	c
Red-breasted Merganser (*Mergus serrator*)	M	c
FALCONIFORMES: Vultures, Eagles and Hawks		
*Turkey Vulture (*Cathartes aura*)	M, SR	u
Black Vulture (*Coragyps atratus*)	V	vr
White-tailed Kite (*Elanus leucurus*)	H	-
Swallow-tailed Kite (*Elanoides forficatus*)	E	-
Mississippi Kite (*Ictinia mississippiensis*)	V,SE	vr
Goshawk (*Accipiter gentilis*)	WR	o

Appendix Table C-3 (continued).

Species	Status	Abundance
FALCONIFORMES (continued)		
Sharp-shinned Hawk (*Accipiter striatus*)	M	fc
*Cooper's Hawk (*Accipiter cooperii*)	M, WR, SE	u
*Red-tailed Hawk (*Buteo jamaicensis*)	M, WR	c
*Red-shouldered Hawk (*Buteo lineatus*)	M, WR, SE	c
*Broad-winged Hawk (*Buteo platypterus*)	M	c
Swainson's Hawk (*Buteo swainsoni*)	M, SE	r
*Rough-legged Hawk (*Buteo lagopus*)	M, WR	c
Ferruginous Hawk (*Buteo regalis*)	M, WR	r
Gray Hawk (*Buteo nitidus*)	H	-
Golden Eagle (*Aquila chrysaetos*)	M, WR	c
*Bald Eagle (*Haliaeetus leucocephalus*)	M, WR, FE	fc
*Marsh Hawk (*Circus cyaneus*)	M, WR, SE	c
Osprey (*Pandion haliaetus*)	M, SE	u
Gyrfalcon (*Falco rusticolus*)	M, WR	vr
Prairie Falcon (*Falco mexicanus*)	V	vr
Peregrine Falcon (*Falco peregrinus*)	M, FE	r
Merlin (*Falco columbarius*)	M	r
*American Kestrel (*Falco sparverius*)	Pr	c
GALLIFORMES: Grouse, Quail, Pheasants and allies		
Ruffed Grouse (*Bonasa umbellus*)	I	-
Willow Ptarmigan (*Lagopus lagopus*)	H	-
*Greater Prairie Chicken (*Tympanuchus cupido*)	PR	r
Sharp-tailed Grouse (*Pedioecetes phasianellus*)	E	-
*Bobwhite (*Colinus virginianus*)	PR	c
*Ring-necked Pheasant (*Phasianus colchicus*)	I, PR	c
Gray Partridge (*Perdix perdix*)	I, PR	u
*Turkey (*Meleagris gallopavo*)	I, PR	u
GRUIFORMES: Cranes, Rails, Gallinules and allies		
Whooping Crane (*Grus americana*)	M	vr
Sandhill Crane (*Grus canadensis*)	M	u
Limpkin (*Aramus guarauna*)	H	-
*King Rail (*Rallus elegans*)	M	u
Clapper Rail (*Rallus longirostris*)	H	-

Appendix Table C-3 (continued).

Species	Status	Abundance
GRUIFORMES (continued)		
*Virginia Rail (*Rallus limicola*)	M, SR	fc
*Sora (*Porzana carolina*)	M, SR	fc
Yellow Rail (*Coturnicops noveboracensis*)	M, SE	r
Black Rail (*Laterallus jamaicensis*)	M, SR, SE	r
Purple Gallinule (*Porphyrula martinica*)	V, SE	vr
*Common Gallinule (*Gallinula chloropus*)	M, SR, ST	u
*American Coot (*Fulica americana*)	M	a
CHARADRIIFORMES: Plovers, Sandpipers, Gulls, Terns and allies		
American Avocet (*Recurvirostra americana*)	M	r
Black-necked Stilt (*Himantopus mexicanus*)	M	vr
American Golden Plover (*Pluvialis dominica*)	M	c
Black-bellied Plover (*Pluvialis squatarola*)	M	u
Piping Plover (*Charadrius melodus*)	M, SE	r
Semipalmated Plover (*Charadrius semipalmatus*)	M	fc
Wilson's Plover (*Charadrius wilsonia*)	H	
*Killdeer (*Charadrius vociferus*)	M, SR	c
*American Woodcock (*Philohela minor*)	M, SR, WR	c, u
Common Snipe (*Capella gallinago*)	M	c
Long-billed Curlew (*Numenius americanus*)	M	vr
Whimbrel (*Numenius phaeopus*)	M	r
Eskimo Curlew (*Numenius borealis*)	Ex,SE	-
Marbled Godwit (*Limosa fedoa*)	M	r
Hudsonian Godwit (*Limosa haemastica*)	M	r
Short-billed Dowitcher (*Limnodromus griseus*)	M	u, fc
Long-billed Dowitcher (*Limnodromus scolopaceus*)	M	u
Stilt Sandpiper (*Micropalama himantopus*)	M	c, o
Greater Yellowlegs (*Tringa melanoleucus*)	M	fc
Lesser Yellowlegs (*Tringa flavipes*)	M	c
Solitary Sandpiper (*Tringa solitaria*)	M	c
*Spotted Sandpiper (*Actitis macularia*)	M, SR	c
Willet (*Catoptrophorus semipalmatus*)	M	o
*Upland Sandpiper (*Bartramia longicauda*)	M, SR, SE	u
Buff-breasted Sandpiper (*Tryngites subruficollis*)	M	o, vr
Ruff (*Philomachus pugnax*)	M	vr

Appendix Table C-3 (continued).

Species	Status	Abundance
CHARADRIIFORMES (continued)		
Curlew Sandpiper (*Calidris ferruginea*)	V	vr
Dunlin (*Calidris alpina*)	M	c, u
Red Knot (*Calidris canutus*)	M	r, vr
Sanderling (*Calidris alba*)	M	u
Purple Sandpiper (*Calidris maritima*)	M	vr
Sharp-tailed Sandpiper (*Calidris acuminata*)	V	vr
Pectoral Sandpiper (*Calidris melanotos*)	M	a
White-rumped Sandpiper (*Calidris fuscicollis*)	M	u, r
Baird's Sandpiper (*Calidris bairdii*)	M	o, u
Least Sandpiper (*Calidris minutilla*)	M	c
Semipalmated Sandpiper (*Calidris pusillus*)	M	c
Western Sandpiper (*Calidris mauri*)	M	o, u
Ruddy Turnstone (*Arenaria interpres*)	M	o
Red Phalarope (*Phalaropus fulicarius*)	M	vr
Northern Phalarope (*Lobipes lobatus*)	M	o, r
Wilson's Phalarope (*Steganopus tricolor*)	M, SE	u
Pomarine Jaeger (*Stercorarius pomarinus*)	M	vr
Parasitic Jaeger (*Stercorarius parasiticus*)	M	vr
Long-tailed Jaeger (*Stercorarius longicaudus*)	M	vr
Skua (*Catharacta skua*)	H	-
Glaucous Gull (*Larus hyperboreus*)	WR	o
Iceland Gull (*Larus glaucoides*)	WR	r
Great Black-backed Gull (*Larus marinus*)	M, WR	vr
Western Gull (*Larus occidentalis*)	V	vr
Herring Gull (*Larus argentatus*)	M, WR	c
Thayer's Gull (*Larus thayeri*)	M, WR	vr
California Gull (*Larus californicus*)	V	vr
Ring-billed Gull (*Larus delawarensis*)	M, WR	c, u
Black-headed Gull (*Larus ridibundus*)	V	vr
Laughing Gull (*Larus atricilla*)	V	r
Franklin's Gull (*Larus pipixcan*)	M	r, o
Bonaparte's Gull (*Larus philadelphia*)	M	fc
Little Gull (*Larus minutus*)	M	vr
Ivory Gull (*Pagophila eburnea*)	H	-

Appendix Table C-3 (continued).

Species	Status	Abundance
CHARADRIIFORMES (continued)		
Black-legged Kittiwake (*Rissa tridactyla*)	M, WR	r
Sabine's Gull (*Xema sabini*)	M	vr
Gull-billed Tern (*Gelochelidon nilotica*)	H	-
Forster's Tern (*Sterna fosteri*)	M, SE	c
Common Tern (*Sterna hirundo*)	M, SE	fc
Roseate Tern (*Sterna dougallii*)	H	-
Least Tern (*Sterna albifrons*)	M, SE	r
Royal Tern (*Sterna maxima*)	H	-
Caspian Tern (*Sterna caspia*)	SR	o
Large-billed Tern (*Phaetusa simplex*)	V	vr
*Black Tern (*Childonias niger*)	M, SR, SE	c
Ancient Murrelet (*Synthliboramphus antiquus*)	V	vr
COLUMBIFORMES: Doves and Pigeons		
*Rock Dove (*Columba livia*)	I, PR	a
*Mourning Dove (*Zenaida macroura*)	M, SR, WR	a, c
Passenger Pigeon (*Ectopistes migratorius*)	Ex	-
Ringed Turtle Dove (*Streptopelia risoria*)	H	-
Ground Dove (*Columbina passerina*)	V	vr
PSITTACIFORMES: Parrots and allies		
Carolina Parakeet (*Conuropsis carolinensis*)	Ex	-
Monk Parakeet (*Myiopsitts monachus*)	H	-
CUCULIFORMES: Cuckoos and allies		
*Yellow-billed Cuckoo (*Coccyzus americanus*)	M, SR	c
*Black-billed Cuckoo (*Coccyzus erythropthalmus*)	M, SR	c, u
STRIGIFORMES: Owls		
Barn Owl (*Tyto alba*)	PR, SE	r
*Screech Owl (*Otus asio*)	PR	c
*Great Horned Owl (*Bubo virginianus*)	PR	fc
Snowy Owl (*Nyctea scandica*)	WR	o
Hawk-Owl (*Surnia ulula*)	V	vr
Burrowing Owl (*Athene cunicularia*)	V	vr

Appendix Table C-3 (continued).

Species	Status	Abundance
STRIGIFORMES (continued)		
*Barred Owl (*Strix varia*)	PR	u
Great Gray Owl (*Strix nebulosa*)	H	-
*Long-eared Owl (*Asio otus*)	WR, SR, SE	u, r
*Short-eared Owl (*Asio flammeus*)	M, WR, SR, SE	u, r
Boreal Owl (*Aegolius funereus*)	V	vr
*Saw-whet Owl (*Aegolius acadicus*)	WR, SR	u, vr
CAPRIMULGIFORMES: Goatsuckers		
*Chuck-will's-widow (*Caprimulgus carolinensis*)	V	r
*Whip-poor-will (*Caprimulgus vociferus*)	M, SR	c, fc
*Common Nighthawk (*Chordeiles minor*)	M, SR	c
APODIFORMES: Swifts and Hummingbirds		
Black Swift (*Cypseloides niger*)	V	vr
*Chimney Swift (*Chaetura pelagica*)	M, SR	c
*Ruby-throated Hummingbird (*Archilochus colubris*)	M, SR	c, fc
Black-chinned Hummingbird (*Archilochus alexandri*)	H	-
CORACIIFORMES: Kingfishers		
*Belted Kingfisher (*Megaceryle alcyon*)	M, SR, WR	c, u,
PICIFORMES: Woodpeckers		
*Common Flicker (*Colaptes auratus*)	M, SR, WR	c, u
*Pileated Woodpecker (*Dryocopus pileatus*)	PR	r
*Red-bellied Woodpecker (*Melanerpes carolinus*)	PR	u
*Red-headed Woodpecker (*Melanerpes erythrocephalus*)	M, SR, WR	c, u
Lewis' Woodpecker (*Melanerpes lewis*)	H	-
Yellow-bellied Sapsucker (*Sphyrapicus varius*)	M, SR, WR	c, o, r
*Hairy Woodpecker (*Picoides villosus*)	PR	fc
*Downy Woodpecker (*Picoides pubescens*)	PR	c
White-headed Woodpecker (*Picoides albolarvatus*)	H	-
Black-backed Three-toed Woodpecker (*Picoides arcticus*)	WR	r
Ivory-billed Woodpecker (*Campephilus principalis*)	Ex	-

Appendix Table C-3 (continued).

Species	Status	Abundance
PASSERIFORMES: Flycatchers, Larks, Swallows and allies		
*Eastern Wood Pewee *(Contopus virens)*	SR	c
Yellow-bellied Flycatcher *(Empidonax flaviventris)*	M	fc
*Least Flycatcher *(Empidonax minimus)*	M, SR	c, u
*Willow Flycatcher *(Empidonax traillii)*	M, SR	c
Alder's or Traill's Flycatcher *(Empidonax alnorum)*	M	c
*Acadian Flycatcher *(Empidonax virescens)*	M, SR	u
*Creat-crested Flycatcher *(Myiarchus crinitus)*	M, SR	c
Olive-sided Flycatcher *(Nuttallornis borealis)*	M	u
*Eastern Phoebe *(Sayornis phoebe)*	M, SR, WR	c
*Eastern Kingbird *(Tyrannus tyrannus)*	M, SR	c
*Western Kingbird *(Tyrannus verticalis)*	M, SR	r, vr
Scissor-tailed Flycatcher *(Muscivora forticata)*	V	r
Ash-throated Flycatcher *(Myiarchus cinerascens)*	V	vr
Says Phoebe *(Sayornis saya)*	V	vr
Vermillion Flycatcher *(Pyrocephalus rubinus)*	V	vr
*Horned Lark *(Eremophila alpestris)*	PR	c
*Barn Swallow *(Hirundo rustica)*	SR	c
*Tree Swallow *(Iridoprocne bicolor)*	SR	c
*Cliff Swallow *(Petrochelidon pyrrhonota)*	TV	u
*Purple Martin *(Progne subis)*	SR	c
*Bank Swallow *(Riparia riparia)*	SR	c
*Rough-winged Swallow *(Stelgidopteryx ruficollis)*	SR	c
Violet-green Swallow *(Tachycineta thalassina)*	V	vr
Gray Jay *(Perisoreus canadensis)*	H	-
Stellers Jay *(Cyanocitta stelleri)*	V	vr
Black-billed Magpie *(Pica pica)*	V	vr
*Common Raven *(Corvus corax)*	E	-
Fish Crow *(Corvus ossifragus)*	SR	u
Clark's Nutcracker *(Nucifraga columbiana)*	H	-
Common Crow *(Corvus brachyrhynchos)*	PR	c
*Blue Jay *(Cyanocitta cristata)*	PR	c
Boreal Chickadee *(Parus hudsonicus)*	WR	vr
*Black-capped Chickadee *(Parus atricapillus)*	PR	c

Appendix Table C-3 (continued).

Species	Status	Abundance
PASSERIFORMES (continued)		
Bohemian Waxwing *(Bombycilla garrulus)*	WR	r
* Northern Shrike *(Lanius excubitor)*	WR	u
* Loggerhead Shrike *(Lanius ludovicianus)*	M, SR, WR	u, r
*Starling (European) *(Sturnus vulgaris)*	PR	a
* Bell's Vireo *(Vireo bellii)*	M, SR	u
* Yellow-throated Vireo *(Vireo flavifrons)*	M, SR	u
*Warbling Vireo *(Vireo gilvus)*	M, SR	c
*White-eyed Vireo *(Vireo griseus)*	M, SR	o
*Red-eyed Vireo *(Vireo olivaceus)*	M, SR	a, c
Philadelphia Vireo *(Vireo philadelphicus)*	M	fc
Solitary Vireo *(Vireo solitarius)*	M	u
Swainson's Warbler *(Limnothlypis swainsonii)*	V	vr
Bachman's Warbler *(Vermivora bachmanii)*	H	-
Black-throated Gray Warbler *(Dendroica nigrescens)*	V	vr
Kirtland's Warbler *(Dendroica kirtlandii)*	E	-
Black-throated Blue Warbler *(Dendroica caerulescens)*	M	fc
Bay-breasted Warbler *(Dendroica castanea)*	M	fc, c
* Cerulean Warbler *(Dendroica cerulea)*	M, SR	u
Myrtle Warbler *(Dendroica coronata)*	M, WR	a, o
* Prairie Warbler *(Dendroica discolor)*	M, Sr	r
Yellow-throated Warbler *(Dendroica dominica)*	V	r
Blackburnian Warbler *(Dendroica fusca)*	M	c
Magnolia Warbler *(Dendroica magnolia)*	M	c
* Palm Warbler *(Dendroica palmarum)*	M, WR	a, r
Chestnut-sided Warbler *(Dendroica pensylvanica)*	M, SR	c, r
*Yellow Warbler *(Dendroica petechia)*	M, SR	c, fc
Pine Warbler *(Dendroica pinus)*	M, WR	u, r
Blackpoll Warbler *(Dendroica striata)*	M	c
Cape May Warbler *(Dendroica tigrina)*	M	u, o
Black-throated Green Warbler *(Dendroica virens)*	M	c
*Common Yellowthroat *(Geothlypis trichas)*	M, SR, WR	c, r
*Worm-eating Warbler *(Helmitheros vermivorus)*	M	o
*Yellow-breasted Chat *(Icteria virens)*	M, WR, SR	U, vr

Appendix Table C-3 (continued).

Species	Status	Abundance
PASSERIFORMES (continued)		
* Black-and-white Warbler *(Mniotilta varia)*	M, SR	c, r
Connecticut Warbler *(Oporornis agilis)*	M	u
* Kentucky Warbler *(Oporornis formosus)*	M, SR	r
* Mourning Warbler *(oporornis philadelphia)*	M, SR	u, o
* Parula Warbler *(Parula americana)*	M	u
* Prothonotary Warbler *(Protonotaria citrea)*	M, SR	u
* Ovenbird *(Seiurus ourocapillus)*	M, SR	a, u
* Louisiana Waterthrush *(Seiurus motacilla)*	M, SR	u, r
Northern Waterthrush *(Seiurus novemboracensis)*	M	c
* American Redstart *(Setophaga ruticilla)*	M, Sr	c
Orange-crowned Warbler *(Vermivora celata)*	M, WR	u, r
* Golden-winged Warbler *(Vermivora chrysoptera)*	M, SR	fc, vr
Tennessee Warbler *(Vermivora peregrina)*	M	a
Blue-winged Warbler *(Vermivora pinus)*	M, SR	u
Nashville Warbler *(Vermivora ruficapilla)*	M, SR	c, vr
Canada Warbler *(Wilsonia canadensis)*	M, SR	fc, r
* Hooded Warbler *(Wilsonia citrina)*	M	o, vr
Wilson's Warbler *(Wilsonia pusilla)*	M	fc
*House Sparrow *(Passer domesticus)*	PR	a
European Tree Sparrow *(Passer montanus)*	PR	u
*Red-winged Blackbird *(Agelaius phoeniceus)*	M, SR, WR	a, u
* Bobolink *(Dolichonyx oryzivorus)*	M, SR	c
Rusty Blackbird *(Euphagus carolinus)*	M, WR	c, o
* Brewer's Blackbird *(Euphagus cyanocephalus)*	M, SR, WR, ST	u, r
* Baltimore Oriole *(Icterus galbula)*	M, SR, WR	c, vr
* Orchard Oriole *(Icterus spurius)*	M, SR	o
* Northern Oriole *(Icterus galbula)*	M, SR, WR	c, vr
* Brown-headed Cowbird *(Molothrus ater)*	M, SR, WR	c, u
*Common Grackle *(Quiscalus quiscula)*	M, SR, WR	c, u
*Eastern Meadowlark *(Sturnella magna)*	M, SR, WR	c, u
* Western Meadowlark *(Sturnella neglecta)*	SR, WR	fc, u
Yellow-headed Blackbird *(Xanthocephalus xanthocephalus)*	M, SR, SE	u
Great-tailed Grackle *(Quiscalus mexicanus)*	V	vr

Appendix Table C-3 (continued).

Species	Status	Abundance
PASSERIFORMES (continued)		
*Tufted Titmouse *(Parus bicolor)*	PR	u
*Carolina Chickadee *(Parus carolinensis)*	V	vr
Red-breasted Nuthatch *(Sitta canadensis)*	M, WR, SR	u, v, vr
*White-breasted Nuthatch *(Sitta carolinensis)*	PR	c
Brown-headed Nuthatch *(Sitta pusilla)*	H	-
*Brown Creeper *(Certhia familiaris)*	V, SE	c
Rock Wren *(Salpinctes obsoletus)*	V	vr
*Short-billed Marsh Wren *(Cistothorus platensis)*	M, SR	u
*Long-billed Marsh Wren *(Cistothorus palustris)*	M, SR	fc, c
*Bewick's Wren *(Thryomanes bewickii)*	M, SR, ST	r
*Carolina Wren *(Thryothorus ludovicianus)*	M, SR, WR	I, u, o
*House Wren *(Troglodytes aedon)*	M, SR	c
Winter Wren *(Troglodytes troglodytes)*	M, WR	fc, o
*Gray Catbird *(Dumetella carolinensis)*	M, SR, WR	c, r
*Mockingbird *(Mimus polyglottos)*	PR	o
*Brown Thrasher *(Toxostoma rufum)*	M, SR, WR	c, r
Sage Thrasher *(Oreoscoptes montanus)*	V	vr
*Veery *(Catharus fuscescens)*	M, SR, ST	c, o
Hermit Thrush *(Catharus guttata)*	M, WR	c, o
Gray-cheeked Thrush *(Catharus minimus)*	M	c, u
*Wood Thrush *(Hylocichla mustelina)*	M, SR	c
Swainson's Thrush *(Catharus ustulatus)*	M	c
*Eastern Bluebird *(Sialia sialis)*	M, SR, WR	c, r
*American Robin *(Turdus migratorius)*	M, SR, WR	a, u
Varied Thrush *(Ixoreus naevius)*	WR	r
Mountain Bluebird *(Sialia currucoides)*	H	-
Townsend's Solitaire *(Myadestes townsendi)*	V	vr
*Blue-gray Gnatcatcher *(Polioptila caerulea)*	M, SR	u
Ruby-crowned Kinglet *(Regulus calendula)*	M, WR	a, o
*Golden-crowned Kinglet *(Regulus satrapa)*	M, WR	c, fc
Water Pipit *(Anthus spinoletta)*	M	u
Sprague's Pipit *(Anthus spragueii)*	M	r
*Cedar Waxwing *(Bombycilla cedrorum)*	M, SR, WR	c, u

Appendix Table C-3 (continued).

Species	Status	Abundance
PASSERIFORMES (continued)		
*Scarlet Tanager *(Piranga olivacea)*	M, SR	c, u
*Summer Tanager *(Piranga rubra)*	M	o
Western Tanager *(Piranga ludoviciana)*	V	vr
Blackheaded Grosbeak *(Pheucticus melanocephalus)*	V	vr
*Blue Grosbeak *(Guiraca caerula)*	M	r
Lazuli Bunting *(Passerina amoena)*	V	vr
Painted Bunting *(Passerina ciris)*	H	-
House Finch *(Carpodacus mexicanus)*	V	vr
European Goldfinch *(Carduelis carduelis)*	H	-
Hoary Redpoll *(Carduelis hornemanni)*	WR	vr
Green-tailed Towhee *(Pipilo chlorurus)*	V	vr
Lark Bunting *(Calamospiza melanocorys)*	V	r
Baird's Sparrow *(Ammodramus bairdii)*	H	-
Black-throated Sparrow *(Amphispiza bilineata)*	V	vr
Gray-headed Junco *(Junco caniceps)*	V	vr
Golden-crowned Sparrow *(Zonotrichia atricapilla)*	V	vr
McCown's Longspur *(Calcarius mccownii)*	H	-
Common Redpoll *(Carduelis flammea)*	M, WR	u
Bachman's Sparrow *(Aimophila aestivalis)*	V, SE	v, r
*Grasshopper Sparrow *(Ammodramus savannarum)*	M, SR	c
Sharp-tailed Sparrow *(Ammospiza caudactua)*	M	u
*Lapland Longspur *(Calcarius lapponicus)*	M, WV, WR	c, u
Smith's Longspur *(Calcarius pictus)*	M	c
*Purple Finch *(Carpodacus purpureus)*	M, WR	u, c
Lark Sparrow *(Chondestes grammacus)*	M, SR	u, c
Evening Grosbeak *(Hesperiphona vespertina)*	M, WR	u
*Slate-colored Junco *(Junco hyemalis)*	M, WR	a
Oregon Junco *(Junco oreganus)*	M, WR	a
Red Crossbill *(Loxia curvirostra)*	WR, SR	c, r
White-winged Crossbill *(Loxia leucoptera)*	WR	u
*Swamp Sparrow *(Melospize georgiana)*	M, SR, WR	c, u
*Song Sparrow *(Melospiza melodia)*	M, SR, WR	c, fc
Lincoln's Sparrow *(Melospiza lincolnii)*	M, WR	fc, r

Appendix Table C-3 (continued).

Species	Status	Abundance
*Fox Sparrow *(Passerella iliaca)*	M, WR	c, o
*Savannah Sparrow *(Passerculus sandwichensis)*	M, SR, WR	c, fc, r
LeConte's Sparrow *(Ammospiza leconteii)*	M, WR	u, r
*Henslow's Sparrow *(Ammodramus henslowii)*	M, SR, ST	o
*Indigo Bunting *(Passerina cyanea)*	M, SR	c
*Rose-breasted Grosbeak *(Pheucticus ludovicianus)*	M, SR	a
Pine Grosbeak *(Pinicola enucleator)*	WR	r
*Rufous-sided Towhee *(Pipilo erythrophthalmus)*	M, SR, WR	c, u
Snow Bunting *(Plectrophenax nivalis)*	M, WR	fc
*Vesper Sparrow *(Pooecetes gramineus)*	M, SR, WR	c, r
McCown's Longspur *(Calcarius mccownii)*	H	-
*Cardinal (Northern) *(Cardinalis cardinalis)*	PR	a
Pine Siskin *(Spinus pinus)*	M, WR	fc
*American Goldfinch *(Carduelis tristis)*	M, SR, Wr	c
*Dickcissel *(Spiza americana)*	M, SR, WR	fc, vr
*Tree Sparrow *(Spizella arborea)*	M, WR	c
*Chipping Sparrow *(Spizella passerina)*	M, SR, WR	c, vr
Clay-colored Sparrow *(Spizella pallida)*	M, SR	o, r
*Field Sparrow *(Spizella pusilla)*	M, SR, WR	c, o
White-throated Sparrow *(Zonotrichia albicollis)*	M, WR	a, u
White-crested Sparrow *(Zonotrichia leucophrys)*	M, WR	fc, o
*Harris's Sparrow *(Zonotrichia querula)*	M, WR	u, r

Appendix Table C-4. Composite taxa list of all mammals taken from or whose ranges include Greene and Scott Counties, Illinois, in the vicinity of the Hillview Drainage and Levee District. (Nomenclature follows Jones, et al. 1975.)

Scientific Nomenclature	Common Name	Habitat[1]
Order		
Species		
Marsupialia		
Didelphis virginiana	Virginia Opossum	WCR
Insectivora		
Blarina brevicauda	Short-tailed Shrew	MW
Cryptotis parva	Least Shrew	MP
Scalopus aquaticus	Eastern Mole	CPF
Chiroptera		
Myotis lucifugus	Little Brown Myotis	CaR
Myotis grisescens (E)	Gray Myotis	Ca
Myotis keenii	Keen's Myotis	CaR
Myotis leibii	Small-footed Myotis	Ca
Lasionycteris noctivagans	Silver-haired Bat	W
Pipistrellus subflavus	Eastern Pipistrel	W
Eptesicus fuscus	Big Brown Bat	W
Lasiurus borealis	Red Bat	W
Nycticeius humeralis	Evening Bat	UW
Lagomorpha		
Sylvilagus floridanus	Eastern Cottontail	SO
Rodentia		
Tamias striatus	Eastern Chipmunk	WS
Marmota monax	Woodchuck	WEP
Spermophilus tridecemlineatus	Thirteen-lined Ground Squirrel	P
Sciurus carolinensis	Gray Squirrel	WR
Sciurus niger	Fox Squirrel	W
Glaucomys volans	Southern Flying Squirrel	W
Geomys bursarius	Plains Pocker Gopher	PO
Castor canadensis	Beaver	A
Peromyscus maniculatus	Deer Mouse	OW
Peromyscus leucopus	White-footed Mouse	WS
Microtus ochrogaster	Prairie Vole	P(dry)

[1]Preferred habitat is given as follows: A = Aquatic habitat; C = Cultivated; Ca = Caves; E = Edge; M = Marsh or Swamp; O = Open country; P = Prairie, Field, or Grassland; R = Riparian; S = Shrub; U = Urban or Developed; W = Woodland.

Appendix Table C-4 (continued).

Microtus pinetorum	Pine Vole	W
Ondatra zibethicus	Muskrat	AM
Synaptomys cooperi	Southern bog lemming	MP
Zapus hudsonicus	Meadow Jumping Mouse	P
Carnivora		
Canis latrans	Coyote	POS
Vulpes vulpes	Red Fox	SEO
Urocyon cinereoargenteus	Gray Fox	
Procyon lotor	Raccoon	R
Mustela frenata	Long-tailed Weasel	R
Mustela vison	Mink	R
Mephitus mephitus	Striped Skunk	WPS
Artiodactyla		
Odocoileus virginianus	White-tailed Deer	SE

Appendix D. Site specific data collected at 21 survey locations during a field reconnaissance of the Hillview Drainage and Levee District, Greene and Scott Counties, Illinois, 9-10 October 1981.

Site 1: Ditch 1, Upper Reach

HABITAT TYPE: Disturbed ditch bank

WOODY VEGETATION

East Bank	West Bank
Acer negundo	* Rhus glabra
Acer saccharinum	* Rubus allegheniensis
* Amorpha fruticosa	* Rubus flagellaris
* Cornus drummondii	
* Gleditsia triacanthos	
* Symphoricarpos orbiculatus	
Ulmus rubra	
* Vitis vulpina	

Dominant Species: Cornus drummondii on east bank, no dominance on west bank.

Cover: 100% woody understory on east bank, with scattered trees. No tree cover on west bank.

Age Class: Less than 15 years.

WILDLIFE HABITAT

Walls of bank on either side of ditch are potential sies for dens. Along west bank is 100% herbaceous cover, mostly grasses, which provides potential cover for small mammals and reptiles. Along the east bank, 100% woody cover can provide nest sites for low nesting bird species as well as cover for birds and arboreal vertebrates. Notice should be taken that the west bank had probably been sprayed with herbicide.

VERTEBRATES PRESENT

Birds

Barn swallow

Site 2: Ditch 1, Middle Reach

HABITAT TYPE: Disturbed ditch bank

WOODY VEGETATION

	Acer negundo		Populus deltoides
	Acer saccharinum	*	Prunus serotina
*	Amorpha fruticosa		Salix interior
*	Carya illinoensis		Sambacus canadensis
*	Cornus drummondii	*	Toxicodendron radicans
*	Diospyros virginiana		Ulmus rubra
	Fraxinus pensylvanica var. subintegerrima		

Dominant Species: Cornus drummondii

Cover: A few scattered trees provide little canopy cover, however shrub cover is approximately 60%.

Age Class: Less than 15 years.

WILDLIFE HABITAT

Potential for dens in walls of ditch along either side. 25 to 45% herbaceous cover provides some potential for ground nesting species and runways. The shrub layer (60% cover) can be a good site for low nesting species.

VERTEBRATES PRESENT

Mammals	Birds
Muskrat (tracks)	Marsh hawk (over adjacent field)
	American goldfinch

Site 3: Ditch 1, Lower Reach

HABITAT TYPE: Disturbed ditch bank

WOODY VEGETATION

	Acer saccharinum	*	Morus alba
*	Amorpha fruticosa	*	Morus rubra
*	Ampelopsis cordata	*	Prunus serotina
*	Campsis radicans		Ptelia trifoliata
	Celastrus scandens	*	Rhus glabra
*	Celtis laevigata	*	Rosa multiflora
	Cephalanthus occidentalis	*	Rubus occidentalis
*	Cornus drummondii	*	Sambucus canadensis
*	Diospyros virginiana	*	Smilax hispida
	Fraxinus pensylvanica var. subinterrima	*	Toxicodendron radicans
	Ilex decidua	*	Ulmus rubra
*	Menispermum canadense	*	Vitis vulpina

Dominant Species: Celtis occidentalis dominates understory
Cover: 50-75% canopy cover; 40% understory cover
Age: Approximately 15 years (Celtis occidentalis)

WILDLIFE HABITAT

Banks of ditch on either side provide den potential; dense understory provides cover and nesting sites. Herbaceous ground cover is 25% under the trees, thus, does not provide a good site for ground nesting vertebrates or cover.

VERTEBRATES PRESENT

Mammals

Muskrat (tracks)

Birds

Common Flicker
Barn swallow
Blue jay
Black-capped chickadee
American robin
Song sparrow

Site 4: Ditch 2, Upper Reach

HABITAT TYPE: Disturbed ditch bank

WOODY VEGETATION

Acer saccharinum
* Celtis laevigata
* Celtis occidentalis
Fraxinus pensylvanica var. subinterrima
* Morus alba
Populus deltoides
* Rosa multiflora
* Sambucus canadensis
* Toxicodendron radicans
Ulmus rubra
* Vitis vulpina

Dominant Species: Acer saccharinum in tree layer; Toxicodendron radicans in shrub layer.

Cover: Less than 10% canopy cover. Both trees and shrubs are scattered.

Age: 3-5 year trees. Nothing is more than 10 ft. tall.

WILDLIFE HABITAT

Steep sides of bank can provide den habitat. Some shrubs for low nesting species or cover are present, but not to any great extent. Herbaceous ground cover is 100%, and would provide good cover for ground nesting and inhabiting species.

VERTEBRATES PRESENT

Birds

American goldfinch

Site 5: Ditch 2, Middle Reach

HABITAT TYPE: Successional shrub field and forest border along stream

WOODY VEGETATION

	Acer saccharinum	*	Rhus glabra
	Acer saccharum	*	Rosa multiflora
*	Amorpha fruticosa	*	Rubus allegheniensis
*	Carya illinoensis	*	Rubus occidentalis
*	Celastris scandens		Salix interior
*	Celtis laevigata		Salix nigra
*	Cornus drummondii	*	Smilax hispida
*	Diospyros virginiana	*	Toxicodendron radicans
*	Juniperus virginiana		Ulmus americana
*	Populus deltoides		Ulmus rubra
	Prunus serotina	*	Vitis vulpina
*	Quercus palustris		

Dominant Species: Trees - Quereus palustris and Populus deltoides; Shrub - Cornus drummondii

Cover: 60% overstory where it occurs; nearly 100% shrub cover.

Age Class: 40-50 years. Trees are 4-6 dm DBH

WILDLIFE HABITAT

Potential for dens exists along walls of bank. Herbaceous layer consists of 75-100% cover, mostly grasses; potentially provides nest and cover along the edge of the forest border. The extensive shrub layer and edge habitat can supply same for a diverse fauna. Snags among the forest contain nest holes, presumably for a number of species.

VERTEBRATES PRESENT

Birds

Mourning dove
Common flicker
Red-bellied woodpecker
Blue jay
Black-capped chickadee
Unid. warbler
American robin
American goldfinch

Site 6: Ditch 2, Lower Reach

HABITAT TYPE: Disturbed ditch bank

WOODY VEGETATION

* Amorpha fruticosa
* Campsis radicans
* Carya illinoensis
* Cornus drummondii
* Diospyros virginiana
* Gleditsia triacanthos
* Juniperus virginiana
* Quercus palustris
* Rubus allegheniensis
Ulmus rubra

Dominant Species: No dominance.

Cover: Few scattered trees, no significant canopy. Shrub layer is 50-75%.

Age Class: Trees approximately 30 years (3-5 dm DBH).

WILDLIFE HABITAT

Stream banks steep, and have a potential for dens. Herbaceous cover is 100%; provides good habitat for ground-nesters and dwellers. Shrub layer, while not excessively dense, is present and provides nest and cover sites.

VERTEBRATES PRESENT

Birds

Pied-billed grebe

Site 7: Ditch 3, Upper Reach; Upstream

HABITAT TYPE: Riparian floodplain and terrace type forest

WOODY VEGETATION

	Acer negundo		Populus deltoides
	Acer saccharinum	*	Rhus glabra
*	Asimina triloba		Salix interior
*	Campsis radicans		Salix nigra
	Catalpa speciosa	*	Smilax hispida
*	Celtis occidentalis	*	Symphoricarpos orbiculatus
*	Gleditsia triacanthos	*	Toxicodendron radicans
*	Lonicera maackii		Ulmus rubra
		*	Vitis vulpina

Dominant Species: Celtis occidentalis tree; Lonicera maackii, shrub

Cover: 75% canopy and 75% understory cover

Age Class: 30-40 years (2-4 dm DBH)

WILDLIFE HABITAT

A heavy understory of honeysuckle provides an abundance of food, and overall, the shrub layer creates nest and cover potential. Herbaceous layer is scattered, less than a 20% cover in the forest, and so is of little value for cover. The banks are not steep, but the low water reveals a rocky bottom, providing nesting habitat and cover for semi-aquatic and aquatic species. A few snags in forest with potential for nest holes.

VERTEBRATES PRESENT

Birds

Turkey vulture (overhead)
Common flicker
Tufted titmouse
Black-capped chickadee
American goldfinch

Amphibians

Unid. (prob Green) frog

Site 8: Ditch 3, Middle Reach

HABITAT TYPE: dense herbaceous cover**

WOODY VEGETATION

Acer saccharinum
* Cornus drummondii

Dominant Species: No dominance

Cover: Less than 5%

Age Class: 3-5 years

** Area along the ditch consists primarily of a tall herbaceous layer of Ambrosia trifida.

WILDLIFE HABITAT

Steep banks have potential for dens. The only herbaceous cover is along the ditch in a narrow row, but plants are spaced so that they provide essentially no cover. No woody layer of any consequence is present.

VERTEBRATES PRESENT

Mammals
Muskrat (tracks)
Skunk (tracks)

Birds
tracks of shorebird, probably Killdeer

Amphibians
Green frog

Site 9: Ditch 3, Upper Reach; Downstream

HABITAT TYPE: extremely disturbed ditch bank**

WOODY VEGETATION

* Celtis occidentalis
Plantanus occidentalis
Populus deltoides
Salix interior
* Sambucus canadensis
Ulmus americana
* Vitis vulpina

Dominant Species: Salix interior

Cover: 5% canopy, scattered

Age Class: Less than 5 years

** Site contains a dense layer of Salix interior along the bank in a single row; the rest has been bulldozed.

WILDLIFE HABITAT

The bank does not provide for dens; water is shallow, and the rocky bottom may be important for nest and cover sites. Some shrub cover exists at the edge of the ditch, none beyond that. Herbaceous cover is 100% under the row of willows, but the area this encompasses is small. Overall, not a particularly good site to attract nesting vertebrates.

VERTEBRATES PRESENT

Birds
Common flicker

Amphibians
Green frog

Site 10: Ditch 4, Upper Reach

HABITAT TYPE: disturbed stream bank

WOODY VEGETATION

	Acer negundo	*	Rhus glabra
*	Campsis radicans	*	Rubus flagillaris
	Carya illinoensis	*	Rubus occidentalis
*	Celtis occidentalis		Salix interior
*	Cornus drummondii	*	Sambucus canadensis
*	Maclura pomifera		Ulmus americana
*	Morus alba		Ulmus rubra
	Populus deltoides	*	Vitis vulpina

Dominant Species: Salix interior

Cover: 100% woody understory (S. interior); 15% canopy

Age Class: Approximately 5 years

WILDLIFE HABITAT

A dense herbaceous cover (70%) and dense woody understory (100%) provide sites for nesting, and cover. A few trees provide scattered nesting sites.

VERTEBRATES PRESENT

Birds

Black-capped chickadee
American goldfinch

Site 11: Ditch 4, Middle Reach

HABITAT TYPE: disturbed ditch bank - open scattered trees and shrubs, mainly herbaceous

WOODY VEGETATION

	Acer negundo	*	Rhus glabra
*	Amorpha fruticosa	*	Toxicodendron radicans
*	Carya illinoensis		Ulmus americana
*	Celtis occidentalis		Ulmus rubra
	Cornus drummondii	*	Vitis vulpina
	Fraxinus pensylvanica var. subintegrifolium		
*	Morus alba		

Dominant Species: No Dominance

Cover: 10% canopy

Age Class: Greater than 20 years

WILDLIFE HABITAT

Dens are present in bank of ditch at water level. Woody vegetation provides little cover, poor habitat. Herbaceous layer (75%) sufficient to provide for nesting and cover.

VERTEBRATES PRESENT

Birds

Red-tailed hawk (over adjacent field)

Site 12: Ditch 4, Lower Reach

HABITAT TYPE: Disturbed ditch bank

WOODY VEGETATION

* Amorpha fruticosa
* Ampelopsis cordata
* Campsis radicans
* Carya illinoensis
* Celtis laevigata
* Celtis occidentalis
* Cornus drummondii
* Morus rubra
Plantanus occidentalis
Populus deltoides
* Prunus americana
* Prunus serotina
* Rhus glabra
Salix interior
Ulmus rubra
* Vitis vulpina

Dominant Species: Cornus drummondii

Cover: Dense shrub layer dominated by C. drummondii with a few scattered trees; 100% shrub cover

Age Class: 20 - 30 years

WILDLIFE HABITAT

Basically one single row of shrubbery along South side of ditch. Little on N. side, mostly cultivated. Shrubby vegetation provides very good cover, but there is very little herbaceous understory (15-20%). The walls of the bank offer den site potential.

VERTEBRATES PRESENT

Birds
Cardinal

Site 13: Little Sandy Creek, Upper Reach (East of Highway)

HABITAT TYPE: disturbed stream bank.

WOODY VEGETATION

	Acer negundo		Populus deltoides
	Acer saccharinum		Salix interior
*	Campsis radicans		Salix nigra
*	Celtis occidentalis	*	Sambucus canadensis
*	Maclura pomifera	*	Toxicodendron radicans
*	Morus alba		Ulmus americana
*	Morus rubra		Ulmus rubra
	Plantanus occidentalis	*	Vitis vulpina

Dominant Species: Salix nigra and Populus deltoides

Cover: 50%

Age Class: 20 years (trees 2-4 dm DBH)

WILDLIFE HABITAT

Banks of stream have potential for dens. 95% herbaceous cover (mostly grasses) provides cover for ground-nesting and dwelling species. A few snags among trees are possible sites for hole-nesters.

VERTEBRATES PRESENT

Birds

Rock dove	American robin
Mourning dove	European starling
Common flicker	American goldfinch
Hairy woodpecker	

Site 14: Little Sandy Creek, Upper Reach (West of Highway)

HABITAT TYPE: Disturbed stream bank**

WOODY VEGETATION

* Morus rubra
Salix interior
Salix nigra
* Sambucus canadensis
* Vitis vulpina

Dominant Species: Salix interior

Cover: 75% shrub layer; no tree layer

Age: 3-5 years.

WILDLIFE HABITAT

Stream bank suitable for dens. A single row of willows along stream and woody understory close to ground provide little cover. Herbaceous layer, mostly comprised of grass, is 30% cover, and provides some nest and runway potential.

VERTEBRATES PRESENT

Birds
Belted kingfisher
Red-winged blackbird
Song sparrow

Amphibians
Unid (Prob Green) frog

Site 15: Little Sandy Creek, Middle Reach

HABITAT TYPE: Disturbed second growth bottomland forest.

WOODY VEGETATION

	Acer negundo		Salix interior
	Acer saccharinum		Salix nigra
*	Amorpha fruticosa	*	Sambucus canadensis
*	Campsis radicans	*	Toxicodendron radicans
*	Cornus drummondii		Ulmus americana
*	Morus rubra	*	Vitis vulpina
	Populus deltoides		

Dominant Species: Salix nigra and Populus deltoides

Cover: 65% canopy cover

Age Class: 40-50 years (trees 3-6 dm DBH)

WILDLIFE HABITAT

Stream banks provide potential den sites. Woody understory vegetation is suitable cover and nest habitat, and higher canopy provides same. Herbaceous cover of 30% offers less potential.

VERTEBRATES PRESENT

Birds

Killdeer (in adjacent field south of levee)
Blue jay

Site 16: Hurricane Creek, Upper Reach

HABITAT TYPE: Disturbed ditch bank

WOODY VEGETATION

Acer saccharinum
* Gleditsia triacanthos
Salix interior

Dominant Species: Salix interior

Cover: 85% canopy where trees occur (just along bank), 0% otherwise

Age Class: 3-5 years

WILDLIFE HABITAT

Low dense willows along bank provide good cover. Bank walls can be den sites. Some sand flats with slow moving water occur in creek; these allow for macroinvertebrate feeders such as shorebirds to feed. Herbaceous ground cover is 15-50% under willows, but 100% otherwise. Bordering streamside vegetation is an old cultivated sunflower field with good seed crop.

VERTEBRATES PRESENT

Birds

Shorebird (Poss Green heron) tracks
Rock dove
Mourning dove
Red-winged blackbird
American goldfinch

Site 17: Hurricane Creek, Middle Reach

HABITAT TYPE: Open woods - riparian

WOODY VEGETATION

Acer saccharinum
* Morus alba
* Morus rubra
Populus deltoides
Salix iterior
Salix nigra

Dominant Species: Salix interior, followed by Populus deltoides

Cover: Canopy 65%; no shrub layer

Age Class: 10-30 yrs.

WILDLIFE HABITAT

Stream banks are potential den sites; beaver den is present in the stream. Lack of shrub layer eliminates the possibility of the presence of many species. Dense (100%) herbaceous cover does occur. The adjacent field is dominated by cultivated sunflowers with a good seed crop.

VERTEBRATES PRESENT

Mammals	Birds
Beaver	
	Black-capped chickadee

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Site 18: Hurricane Creek, Lower Reach

HABITAT TYPE: Disturbed stream bank

WOODY VEGETATION

Acer saccharinum
Salix interior
Salix nigra

Dominant Species: Acer saccharinum

Cover: 20% (scattered trees)

Age Class: 10 years (0-2 dm DBH)

WILDLIFE HABITAT

Banks of stream are potential den sites. No shrub layer or mast/fruit producers are present. Herbaceous ground cover is 80%. The open habitat does not appear to be attractive to a great diversity of species.

VERTEBRATES PRESENT

Birds
Blue jay
Red-winged blackbird

Site 19: Little Sandy Creek, Lower Reach, Riverward of Levee

HABITAT TYPE: Mature bottomland forest.

WOODY VEGETATION

Acer saccharinum
* Campsis radicans
* Morus rubra
Populas deltoides
Ulmus rubra
* Vitis vulpina

Dominant Species: Acer saccharinum

Cover: 65% canopy

Age Class: 40-60 years (trees 3-9 dm DBH)

WILDLIFE HABITAT

Potential for dens not present on frontal flats. Some dense woody understory occurs, and herbaceous cover is 75%, comprised primarily of grasses. Snags occur within forest and are sites for nest holes, evidenced by the presence of hole nesters. Some standing water is present. This is a habitat of diverse structure, including forest edge, wetlands, and mature forest of relatively considerable area for this drainage district.

VERTEBRATES PRESENT

Birds
Great blue heron
Common flicker
Red-bellied woodpecker
Red-headed woodpecker
Blue jay

Amphibians
Leopard frog

Site 20: Illinois River, Riverward of Middle of Levee

HABITAT TYPE: Heavily disturbed bottomland forest.

WOODY VEGETATION

	Acer saccharum	Plantanus occidentalis
*	Campsis radicans	Populus deltoides
*	Celtis occidentalis	Salix nigra
	Cephalanthus occidentalis	Ulmus rubra
*	Forestiera acuminata	* Vitis vulpina
*	Ilex decidua	
*	Maclura pomifera	
*	Menispermum canadense	
*	Morus rubra	

Dominant Species: Populus deltoides (4-6 dm dbh) and Acer saccharum (1-3 dm DBH and many saplings less than 1 dm DBH)

Cover: 85% canopy cover

Age Class: 25 years

WILDLIFE HABITAT

No dens or den potential noted along frontal flats. Low woody vegetation occurs throughout forest. Scattered snags occuring. 5% ground cover offers little cover.

VERTEBRATES PRESENT

Birds

- Common flicker
- Red-bellied woodpecker
- Red-headed woodpecker
- Blue jay
- Common crow
- Cardinal

Site 21: Hurricane Creek; Lower Reach, Riverward of Levee

HABITAT TYPE: Immature, disturbed bottomland forest.

WOODY VEGETATION

	Acer saccharinum		Populus deltoides
*	Campsis radicans	*	Quercus palustris
*	Carya illinoensis		Salix nigra
*	Crataegus sp.		Ulmus americana
*	Diospyros virginiana		Ulmus rubra
*	Forestiera acuminata	*	Vitis vulpina
	Gleditsia triacanthos		

Dominant Species: Acer saccharinum

Cover: 70 - 80% canopy

Age Class: 25 years

WILDLIFE HABITAT

Wetland habitat is present on riverward side of levee, extending along forest edge. Appears to be permanent, and so when not covered by flooding river can provide nesting sites for amphibians, shorebirds on migration. Snags scattered throughout forest. Some litter on ground (5% cover) provides a little cover.

VERTEBRATES PRESENT

Mammals
- Muskrat
- Eastern cottontail
- Whitetail deer

Birds
- Great blue heron
- Common flicker
- Red-bellied woodpecker
- Red-headed woodpecker
- Downy woodpecker
- Eastern wood pewee
- Common crow
- Black-capped chickadee
- Tufted titmouse
- White-breasted nuthatch

APPENDIX E. Composite list of Illinois classified endangered and threatened plant and animal species (from Illinois Department of Conservation 1980).

MAMMALS - ENDANGERED
- Gray Bat
- Indiana Bat
- Eastern Wood Rat
- White-tailed Jackrabbit

MAMMALS - THREATENED
- River Otter
- Bobcat
- Golden Mouse
- Rice Rat

BIRDS - ENDANGERED
- Double-crested Cormorant
- Snowy Egret
- Great Egret
- Little Blue Heron
- American Bittern
- Black-crowned Night Heron
- Mississippi Kite
- Cooper's Hawk
- Red-shouldered Hawk
- Swainson's Hawk
- Bald Eagle
- Osprey
- Marsh Hawk
- Peregrine Falcon
- Greater Prairie Chicken
- Yellow Rail
- Black Rail
- Purple Gallinule
- Piping Plover
- Eskimo Curlew
- Upland Sandpiper
- Wilson's Phalarope
- Forster's Tern
- Common Tern
- Least Tern
- Black Tern
- Barn Owl
- Long-eared Owl
- Short-eared Owl
- Brown Creeper
- Bachman's Warbler
- Yellow-headed Blackbird
- Bachman's Sparrow

BIRDS - THREATENED
- Common Gallinule
- Bewick's Wren
- Veery
- Loggerhead Shrike
- Swainson's Warbler
- Brewer's Blackbird
- Henslow's Sparrow

AMPHIBIANS, REPTILES - ENDANGERED
- Dusky Salamander
- Silvery Salamander
- Spotted Turtle
- Slider
- Illinois Mud Turtle
- Broad-banded Watersnake
- Eastern Ribbon Snake

AMPHIBIANS, REPTILES - THREATENED
- Illinois Chorus Frog
- Western Hog-nosed Snake
- Whip Snake
- Great Plains Rat Snake

FISH - ENDANGERED
- Bigeye Chub
- Bluebreast Darter
- Bluehead Shiner
- Harlequin Darter
- Longjaw Cisco

FISH - THREATENED
- Cisco
- Longnose Sucker
- Alligator Gar
- Pugnose Shiner
- Blacknose Shiner
- Bantam Sunfish
- Lake Whitefish
- Lake Sturgeon

MUSSELS - ENDANGERED
- Higgin's Eye Pearly
- Orange-footed Pimpleback
- Pink Mucket Pearly
- Rough Pigtoe Pearly
- Sampson's Pearly
- Tuberculed-blossom Pearly
- White Cat's Paw Pearly
- White Wartyback Pearly

PLANTS - ENDANGERED
- Marsh Horsetail
- Meadow Horsetail
- Running Pine
- Ground Pine
- Bog Clubmoss
- Southern Grape Fern
- Daisyleaf Grape Fern
- Dwarf Grape Fern
- Log Fern
- Oak Fern
- New York Fern
- Long Beech Fern
- Rusty Woodsia
- Virginia Chain Fern
- Trailing Juniper
- Jack Pine
- Shortleaf Pine
- Red Pine
- Small Burhead
- Arrowhead
- Water Arum
- Thismia
- Prairie Spiderwort
- Winged Sedge
- Golden Sedge
- Swollen Sedge
- Plantain-leaved Sedge
- Sedge (24 species)
- Galingale
- Knotted Spikerush
- Spikerush (3 species)
- Rusty Cotton Grass
- Tall Cotton Grass
- Baldwin's Frimbristylis
- Vahl's Frimbristylis
- Umbrella Grass
- Mottled Lipocarpha
- Grass Beak Rush
- Beak Rush (2 species)
- Tufted Bulrush
- Alkali Bulrish
- Weak Bulrush
- Bulrush (7 species)
- Netted Nut Rush
- Bearded Wheat Grass
- Marram Grass
- Three-awn
- American Slough Grass
- Drooping Wood Reed
- Manna Grass
- Northern Manna Grass
- Rattlesnake Grass
- Beard Grass
- Salt Meadow Grass
- Northern Panic Grass
- Hemlock Panic Grass
- Long-leaved Panic Grass
- Panic Grass (7 species)
- Hairy Bead Grass
- Bead Grass (2 species)
- Grove Bluegrass
- Bluegrass
- Weak Bluegrass
- Wolf's Bluegrass
- False Melic Grass
- Eastern Blue-eyed Grass
- Mountain Blue-eyed Grass
- Richardson's Rush
- Vasey's Rush
- Hairy Woodrush
- Arror Grass
- Common Bog Arrow Grass
- Slender Bog Arrow Grass
- Wild Hyacinth
- Turk's Cap Lily
- Indian Cucumber Root
- Downy Solomon's Seal
- Nodding Trillium
- Trillium
- Ill-scented Trillium
- White Camass
- Powdery Thalia
- Moccasin Flower
- Small Yellow Lady's Slipper
- White Lady's Slipper
- Showy Lady's Slipper
- Orange Fringed Orchid
- Wood Orchid
- Tubercled Orchid
- Hooker's Orchid
- Prairie White Fringed Orchid
- Purple Fringed Orchid
- Crested Coralroot Orchid
- Small Whorled Pogonia
- Whorled Pogonia
- Snake-mouth
- Yellow-lipped Ladies' Tresses
- Hooded Ladies' Tresses
- Spring Ladies' Tresses
- Mud Plantain
- Grass-leaved Pondweed
- White-stemmed Pondweed
- Spotted Pondweed
- Fern Pondweed
- Stiff Pondweed
- Vasey's Pondweed
- American Burreed
- Green-fruited Burreed

Water Willow
Moschatel
Bloodleaf
Bristly Sarsaparilla
Virginia Snakeroot
Woolly Milkweed
Mead's Milkweed
Oval Milkweed
Climbing Milkweed
Allegheny Barberry
Speckled Alder
Yellow Birch
Gray Birch
Stickseed
Slender Heliotrope
Marbleseed
Arrowwood
Royal Catchfly
Great Chickweed
False Heather
Pinweed
Water Marigold
Carolina Thistle
Thoroughwort
Clammy Cudweed
Tall Sunflower
Lakeside Daisy
Wild Lettuce
Western Wild Lettuce
White Melanthera
Prairie Dandelion
Missouri Orange Coneflower
Goldenrod (2 species)
Bunchberry
Cuckoo Flower
Whitlow Grass
Silvery Bladderpod
Hairy Marsh Yellow Cress
Yellow Cress
Squirting Cucumber
Round-leaved Sundew
Buffaloberry
Bearberry
Wintergreen
Highbush Blueberry
Large Cranberry
Deerberry
Spurge
Seaside Spurge
American Chestnut
Nutall's Oak
Screwstem
Prairie Rose Gentian
Northern Cranesbill
Shore St. John's Wort
Northern St. John's Wort
St. John's Wort
Kalm's St. John's Wort
Marsh St. John's Wort
One-flowered Hydrolea
Phacelia
Pale Hickory
Sessile Water Horehound
False Dragonhead
White Mountain Mint
Mountain Mint
Hedge Nettle
Hairy Synandra
Smooth False Indigo
Price's Groundnut
Tennessee Milk Vetch
Yellow Wild Indigo
Yellowwood
Boykin's Dioclea
Beach Pea
Prairie Clover
Leafy Prairie Clover
Buffalo Clover
Horned Bladderwort
Flat-leaved Bladderwort
Small Bladderwort
Kankakee Mallow
Globe Mallow
Sweetfern
Small Enchanter's Nightshade
Small Dundrops
Broomrape
Clustered Broomrape
Large Wood Sorrel
Golden Corydalis
Hale's Corydalis
Pink Corydalis
Heart-leaved Plantain
Small Plantain
Silverbell Tree
Bigleaf Snowbell Bush
White Basswood
Rock Elm
Hemlock Parsley
Small Wild Carrot
Eryngo
Water-pennywort
Mock Bishop's Weed (2 species)
Nettle
Corn Salad (2 species)
Marsh Valerian
Canada Violet
Hairy White Violet
Primrose Violet
Plains Violet
Phlox
Sangamon Phlox
Pink Milkwort
Halbred-leaved Tearthumb
Carey's Heartsease
Smartweed
Sour Dock
Fameflower
Jeweled Shooting Star
Loosestrife
Creeping Loosestrife
Bird's-eye Primrose
Spotted Wintergreen
Pipsissewa
Round-leaved Shinleaf
One-sided Pyrola
False Bugbone
Blue Jasmine
Leatherflower
Spearwort
Seaside Crowfoot
Supple-jack
Redroot
Alder Buckthorn
Shadbush
Purple Avens
Narrow-leaved Crabapple
Cinquefoil
Arching Dewberry
Purple-flowering Raspberry
Rubus Odoratus
Dwarf Raspberry
Bristly Blackberry
American Burnet
American Mountain Ash
Barren Strawberry
Dwarf Bedstraw
Balsam Poplar
Autumn Willow
Dune Willow
Wooly Buckthorn
Pitcher Plant
Mock Orange
Northern Gooseberry
Early Saxifrage
Water Hyssop
Downy Yellow Painted Cup
Cow Wheat
Yellow Monkey Flower
Large-flowered Beard Tongue
American Brooklime

PLANTS - THREATENED

Northern Grape Fern
Bradley's Spleenwort
Black Spleenwort
Hay-scented Fern
Ground Juniper
Arbor Vitae
Tamarack
Twig Rush
Spike Rush
Beaked Rush
Bulrush
Rice Grass
Swamp Red Iris
Grass-leaved Lily
False Asphodel
Green Trillium
False Hellebore
Grass Pink
Spotted Corral-root Orchid
Tubercled Orchid
Ginseng
Narrow-leaved Green Milkweed
Climbing Milkweed
Jame's Clammyweed
Yellow Honeysuckle
Red-berried Elder
Slender Sandwort
Strawberry Bush
False Tarragon
Aster
Schreber's Aster
Narrow-leaved Sunflower
Cliff Goldenrod
Patterson Bindweed
Sea Rocket
Narrow-leaved Sundew
Leatherleaf
Willow Oak
Rock Chestnut Oak
Blue Sage
Pale Vetchling
Downy Willow Herb
Star-flower
Golden Seal
Prairie Buttercup
Queen-of-the-Prairie
Bog Bedstraw
Sullivantia
Marsh Speedwell
Storax
Water Elm
Dog Violet

APPENDIX F. Locations of Illinois designated Natural Areas in the vicinity of the Hillview Drainage and Levee District, Greenu and Scott Counties, Illinois.

ILLINOIS NATURAL AREAS

Area Name	County	Legal Location	Ownership	Area (acres)
Twin Culvert Cave	Pike	SWQ SEC17 TS7 R2W 4PM	Private 3 Owners	10
Pearl Limestone Quarry	Pike	SH SEC10 TS7 R2W 4PM	Private	17
Pearl Prairie Geological Area	Pike	EH SEC16	Private 2 owners	10
Pirate Knob Hill Prairie	Pike	NEW SEC 26 NWQ SEC 25 T6S R2W 4PM	Private 1 owner	4.2